JUN 14 1924

THE BOSTON Medical and Surgical JOURNAL

Owned and Published by the MASSACHUSETTS MEDICAL SOCIETY

OFFICIAL ORGAN OF THE NEW ENGLAND SURGICAL SOCIETY, AND OF THE BOSTON SURGICAL SOCIETY, INC.

Volume 190, Number 24
$6 per Annum, 25c per copy

THURSDAY, JUNE 12, 1924

Published Weekly in Boston
at 126 Massachusetts Avenue

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Weed Hay Fever

THE Late Summer and Early Autumn Type of Hay Fever is caused by many of the common weeds, as—Ragweed, Russian Thistle, Sage Brush—the species differing widely according to locality. To assure specific treatment diagnostic tests are essential. To assure preseasonal treatment early diagnoses should be made,—otherwise the less desirable, though often beneficial, coseasonal treatment will be involved. List of late flowering weeds, showing regional distribution and time of pollination, sent on request.

GIANT RAGWEED *Ambrosia trifida*

RUSSIAN THISTLE *Salsola pestifer*

SAGE BRUSH *Artemisia tridentata*

The Arlington Chemical Company

Yonkers, New York

THE BOSTON
Medical and Surgical
JOURNAL

VOLUME 190 JUNE 12, 1924 NUMBER 24

ORIGINAL ARTICLES

The Massachusetts Medical Society

THE ANNUAL DISCOURSE*

NOTE.—At an adjourned meeting of the Massachusetts Medical Society, held October 3, 1860, it was

Resolved, "That the Massachusetts Medical Society hereby declares that it does not consider itself as having endorsed or censured the opinions in former published Annual Discourses, nor will it hold itself responsible for any opinions or sentiments advanced in any future similar discourses."

Resolved, "That the Committee on Publications be directed to print a statement to that effect at the commencement of each Annual Discourse which may hereafter be published."

THE RELATIONS OF THE MASSACHUSETTS MEDICAL SOCIETY TO THE PUBLIC*

BY JAMES S. STONE, M. D., OF BOSTON

On November 9th, 1781, Dr. E. A. Holyoke of Salem called together the Fellows of the Massachusetts Medical Society for their first meeting to be held in the County Court House in Boston a few weeks later. In the charter granted by the General Court just before the call was issued the preamble reads thus:—

"Health is essentially necessary to the happiness of Society; and its preservation or recovery is closely connected with the knowledge of the animal economy and of the Properties and Effects of Medicines; the benefit of medical institutions, formd on liberal principles, and encouraged by the patronage of the law is universally acknowledged."

Aside from prescribing the details of the organization of the Society the essential portion of the charter rests in these words:—

"Whereas it is clearly of importance, that a just discrimination should be made between such as are duly educated and properly qualified for the duties of their profession, and those who may ignorantly and wickedly administer medicine, whereby the health and lives of many valuable individuals may be endangered, or perhaps lost to the community.

"Be it therefore enacted by the authority aforesaid, That the President and Fellows of said Society, or other such of their Officers or Fellows as they shall appoint, shall have full power and authority to examine all candidates for the practice of Physic and Surgery (who shall offer themselves for examination, respecting their skill in their Profession,) and if upon such examinotion the said candidates shall be found skilled in their profession, and fitted for the practice of it, they shall receive the approbation of the Society in letters testimonial of such examination, under the Seal of the said Society."

At the same time that Dr. Holyoke issued the call for the first meeting Dr. John Warren wrote a letter to the public quoting the words of the charter and urging "the wise and observant of the Faculty and the curious in every profession to communicate whatever" observations they might make which would further the advancement of medical knowedge. Dr. Warren further points out "the purpose of enabling the people at large (who might otherwise be incapable of fully discerning the qualifications of candidates for practice) to distinguish the persons upon whom they may rely."

The Charter of the Society and the letter of Dr. Warren not only epitomize the purposes for which the Society was founded and for which it has stood throughout its life of one hundred and forty-three years, but they also serve as a guide for future progress.

The advancement of public health.

The advancement of medical knowledge.

The sound training of physicians.

The information of the public upon medical matters.

These are the purposes outlined. It may be worth while to review briefly the activities of the Society along these several lines and to consider how they have affected the relations of the Society to the public.

The betterment of public health must be brought about in great part by popular education. Upon these matters the Society has always taken advanced ground. In 1861 it petitioned the Legislature in favor of the establishment of a State Board of Health, and eight years later Massachusetts established the first board in this country. The establishment of local boards was stimulated by the epidemic of smallpox in 1872. Later the Society took a prominent part in perfecting the laws relating to the care of the

*The Annual Discourse delivered before the Massachusetts Medical Society June 7, 1924.

insane. In 1894 the Society established a Standing Committee on State and National Legislation for the purpose of "promoting the sanitary interests of the community, medical education and the general interests of the profession as affected by registration laws, etc." One of the chief concerns of this committee has been with reference to the laws safeguarding the public health.

Although the Society has had its opponents from the earliest days it is probable that of recent years active antagonism to the Medical Profession has increased. It is difficult to get at any specific reasons for this opposition or to say when it began. Yet in a general way the growth of medical science seems to have aroused antagonism among a portion of the public even in spite of the vast good which truly scientific medicine has done for humanity. The first active opposition to medical progress which appeared in the Legislature was in 1894 when the Massachusetts Society for the Prevention of Cruelty to Animals appeared against animal experimentation. But within twenty-five years thereafter the headquarters of that Society and the Angell Memorial for Animals were established next door to the Harvard Medical School. Of late years the opposition to animal experimentation has been limited in extent. The change in the attitude of the public is to be attributed chiefly to a better understanding of the accomplishments and aims of the profession.

As the public has become educated to the necessity and beneficence of reasonable animal experimentation the opponents of medical progress have curiously enough become active against measures intended to prevent disease. Under the appealing name of the Medical Liberty League Inc. they have actively sought to abolish such well proved and salutary measures as the compulsory vaccination of school children, and have shown their true spirit in an active campaign against vaccination for typhoid fever and against the use of toxin-antitoxin to produce an immunity to diphtheria, instances in which in civil life there has been no element of compulsion. The unreadiness of any individual to submit to slight temporary inconvenience in order to prevent an evil seemingly remote has helped them. The conditions resemble those regarding fire hazard. Insurance companies have tried for years to educate an indifferent public. At last the educational campaign against our barbarous fire losses is nation-wide. Medical Societies and health authorities have tried to arouse the public to the need of measures to prevent disease. Recently a new organization of laymen, The Friends of Medical Progress, which includes among its officers men of world wide reputation, has been formed to counteract the pernicious influence of those fanatics who may be sincere in their beliefs but who are often so dishonest in their intellctual processses as to make impossible any rational discussion with them upon medical matters.

The medical profession of recent years has really appeared before Legislative Committees in a defensive attitude. This Society has advocated measures for safeguarding the public health by raising the standards for the practice of medicine and by extending measures to control disease. We have had to oppose measures with diametrically opposite purposes. Under an autocracy the success of measures for the prevention of disease has of course been most striking. The elimination of yellow fever in Cuba, the sanitation of the canal zone, the prevention of typhoid fever in the army are examples of what can be accomplished. It is notorious that a democracy is slow to learn the lessons acquired by the experience of a preceding generation.

It is futile to expect to make real progress at hearings before Legislative Committees. This Society must go to the people and educate them upon matters dealing with the prevention of disease and with the need of reasonable educational requirements for the right to practice medicine under any name. The public need not know the details of medicine but they should be kept informed of medical progress in an authoritative way. It is unfortunate that sensational claims which the future cannot sustain are often published in the daily press. But it is even more unfortunate that the really sensational progress made in matters of hygiene and the prevention of disease are not emphasized. One reason for this is that the progress is not made in a day. The public and even the medical students of the present day do not realize what typhoid fever and the summer diarrhoeas of infancy meant a few years ago, any more than the fanatics can understand what smallpox used to be. Much of the progress is due to the aid of laymen, such organizations as the Community Health Associations. Some of our local boards of health are strong and have taken a leading part in health education.

The next great steps forward must be in educating the people to submit to certain inconveniences and restraints for their own and the common good. Our boards of health must be kept strong. Their educational work must be increased and their activities broadened in the prevention of disease and the maintenance of health. Fortunately movements started long ago have led to the formation of a great school of public health. But we must see to it that there is no divorce of training in public health and preventive medicine from the education for the practice of medicine.

When the public understands what scientific medicine has accomplished and is accomplishing to make the lives of children safer and happier we may confidently expect that the opponents of this progress who have never raised a finger

to better conditions will be swept aside. And when the public realizes the need of adequate training for dealing with the lives and health of the people we need have no fear that the standards for practice will not be kept high. This Society and our medical schools must however keep constantly in mind that they exist solely to serve the public and while popular clamor must not swerve our society and our schools from what they regard as right they must remember that at times there is a sound basis for popular criticism.

The advancement of medical knowledge is of course the chief function of all medical meetings and publications. In 1811 the *New England Journal of Medicine and Surgery* was established. In 1828 it became the BOSTON MEDICAL AND SURGICAL JOURNAL, now owned and published by the Society and nearing a hundred years of existence under the present name. Thus this JOURNAL is far older than that of the American Medical Association, the only other weekly medical publication in this country. It is impossible and unnecessary here to review the contributions to medical knowledge made by the members of this Society but the record of Massachusetts is one of which we may well be proud.

The advances in medical knowledge of recent years have been so varied and so rapid as to have led to great confusion. Articles dealing with special and general subjects have appeared in such profusion as to make it impossible for any individual to read more than a limited number of papers dealing with subjects of particular personal interest. It has been difficult for even the most careful to judge with accuracy the value to be attached to many papers. Much that is published has no bearing upon actual problems in medicine. The profusion of publications is due in part to an artificial stimulus given by medical schools. Productivity in lines of original research is one basis for promotion. Clinical knowledge and experience, the ability to inspire and direct students, even the ability to teach have been made at times matters of secondary importance.

The wonderful advances in organic and biologic chemistry have given tremendous aid to medicine, but our present knowledge is only the beginning of what we may confidently expect the future holds in store. As our knowledge increases new facts may alter conclusions which today seem fully warranted. The laboratory worker suffers not only from the limitations of our present knowledge but also from the impossibility of knowing many factors which may influence the chemical and biological processses going on in any given individual. Dr. W. B. Cannon has pointed out the effects of the emotions. The clinician must determine the cause of any temporary symptoms. The reactions to given stimuli vary in different individuals.

In Pathology and Bacteriology tremendous progress has been made. The most encouraging development of recent years has been the recognition by the pathologist that in making up his opinion regarding what he sees under the microscope he must consult the clinician as to the history and progress of the disease.

The Roentgenologist is also recognizing the impossibility of forming a judgment as to the nature of the picture he sees without a knowledge of the clinical history. The shadows seen in the plate are merely indications of reaction to various stimuli, either bacterial, mechanical or chemical, and in order properly to understand what is seen one must take account of the rapidity with which the reaction has occurred and the stage at which the picture is taken.

The recognition by the pathologist of the dependence of his interpretations upon clinical facts has been a relatively slow development as compared with the recognition by the Roentgenologist of his inability to determine by the plate alone the nature of the conditions seen. The very wide use by the clinician of the X-ray has hastened the recognition of the fact that the conclusions of both the pathologist and the Roentgenologist must be dependent in great measure on clinical facts.

The increased interest in the microscopic findings in tumors that is coming about as a result of the recognition of the benign nature of giant cell tumors in bone, formerly regarded as malignant, and as a result of the studies being carried on by the Registry of Bone Sarcoma and in other similar ways, is bound to bring the clinician and the pathologist nearer together. The knowledge that the pathologist must depend upon clinical data in forming his judgments must increase the interest of the clinician in the microscopic study of the tissues with which he is dealing.

The physician must be wary in assuming that our present knowledge justifies the importance at times attached to purely laboratory data. It is unsafe to draw conclusions either of a positive or negative character, from our present limited knowledge. Yet there is a constant tendency for laboratory workers to make a diagnosis and suggest treatment based on the limited number of observations made. And again in the absence of positive laboratory findings there has at times been a tendency to assert that there is no organic disease in cases in which the less learned physician knows that there is serious trouble but is unable to determine its nature.

Perhaps in time our knowledge of psychology will be sufficient to help us in determining the influence of the mind upon physiological and pathological processes. But if the scientific physician of the future is required to correct accurate chemical determinations by uncertain psychological studies his difficulties in attaining scientific precision must be as great as those of

the general practitioner of today who studies what facts he can obtain without the aid of elaborate laboratory tests.

Already our knowledge in chemistry has gone so far that the physician who has the opportunity for laboratory study must limit himself to some particular field and even then at the expense of wider clinical studies. As our knowledge grows, the problems of the individual laboratory worker increase in number and complexity to such an extent as to limit further the chances for clinical study of wide range. The laboratory worker and the clinician must work in coöperation. In this way the practitioner of medicine must again come into his old position of importance as the keen student of disease, aided as he will be in the future by the greater and greater advances constantly being made. The opportunities for scientific advance through clinical study have been emphasized by Sir James Mackenzie. Undue emphasis given to laboratory research has often been distinctly harmful. Specialization has been encouraged to an abnormal degree. Intensive work of practical value along one line may lead to wonderful results in diagnosis and treatment but it inevitably tends to distort and at times almost to destroy the sense of proportion and perspective. At times the methods of treatment adopted have been contrary to fundamental principles. In some instances the general welfare of the patient suffers in order that one particular condition may be benefited. At times the persuasive power of an investigator leads others as well as himself to attach undue weight to findings which have but limited application. The viewpoint of the student is distorted. The practitioner may follow one fad after another.

The desire to be is the front rank in progress has led at times to the publication of articles against which protest should be made. Fanciful dreams ought not be put forth in supposedly reputable journals and before educated assemblies in terms intended to give the impression that they are scientific facts. Fortunately New England has been comparatively free from this type of publication, but when such articles appear under the names of men prominent in the medical profession anywhere they react upon all of us. It is hardly fair to pass by without rebuke articles consisting chiefly of such fancies as make their authors entertaining companions who stimulate the imagination, while we justly expel from the Society a former fellow who agrees to cure for a large fee by the absolutely fraudulent methods called the electronic reactions. The regard for medical science cannot endure among educated men if we permit articles in leading journals to pass unnoticed when their character is such as to prevent rational scientific discussion. If increased medical knowledge seems to be responsible for some of the faults found with the medical profession of today the only remedy is further knowledge and better education.

Although the Massachusetts General Hospital was founded thirty years after this Society the development of hospitals in our large cities has occurred within the last fifty years and in the smaller cities within a much more recent period. The smaller community hospital is springing up everywhere today.

The influence of hospital development on the medical profession has been very great. The advantages are obvious. Better facilities in rooms and equipment, the advantages of concentration of work and greater opportunity to obtain nursing care necessarily go with any good hospital. Better laboratory facilities, the advantages of conference, contact, and coöperation are of inestimable advantage to physician and patient. The small community hospitals seem to offer the most reasonable solution of the problems of medical service in the country. Nurses are trained and knowledge is advanced in almost all hospitals today.

Surgery in its various branches has made tremendous strides. The work done today in the small town hospitals is infinitely better than the work done a short generation ago by the leaders in the metropolitan hospitals. The prompt and brilliant results often attained have made many eager even to seek surgery as a relief for their complaints and have led some surgeons to forget the limitations of their powers. The specialists are those most apt to magnify the results to be hoped for from intervention in the fields to which they confine their activities. It is not to be expected that there will ever again be such a wave of harmful surgery as the wholesale removal of ovaries for the relief of functional disturbances among women. Yet not many years ago castration for prostatic enlargement was very widely practiced for a few months. Already there is a great reaction against the needless removal of the tonsils and a growing feeling that there should be other indications than the wish of the school nurse. One of the most encouraging recent indications of the purpose of this Society to advance medical knowledge is the formation and the progress of the Section on Obstetrics which is studying the results of modern midwifery.

This Society must recognize and adopt safeguards against the dangers incident to the concentration of patients in hospitals, and be tolerant of those in official position who would also aid in this matter. And we must recognize that surgery is not justified unless the results to be expected are better, safer and more prompt than can be obtained by conservative means.

Fortunately the direct responsibility for the teaching of medical students was met by the founding of the Harvard Medical School a year after the organization of this Society.

In 1823 The Berkshire Medical Institution

was founded in Pittsfield and within a few years rivalled the Harvard School in the number of students, but in 1867 this school passed out of existence. All are familiar with the growth of the other high grade medical schools in Massachusetts as well as with the continued existence in this state of two schools which maintain standards so low as to be deemed unworthy of recognition.

In the early days the responsibility for the right to practice medicine rested in part at least upon this Society. But with the increased authority given to Medical Schools the rather loosely defined powers of the Society in this matter grew less. For many years there was no restriction upon the right to practice medicine until the passage of the Medical Practice Act in 1894.

With all the changes that have taken place the Society still maintains its own standards for fellowship and cannot avoid a share in the responsibility for the training of physicians. The Society refuses to recognize certain unfit schools. It takes a perfectly definite stand against the practice of medicine in any form or under any name by those unfit or inadequately trained for their responsibilities.

An obligation however rests upon the Society to exert its influence to maintain a sufficient number of well trained physicians to meet the needs of the Commonwealth and to a less extent of the neighboring states which look to our schools for their future physicians.

Not long ago President Eliot pointed out the need of more physicians in the smaller communities and of more men in preventive medicine. It is interesting to note that the falling off in the number of those willing to take up practice in the smaller towns has coincided with the increasing importance of the laboratory in medical education. The increasing investment of time and money needed to secure a medical education maks it impossible for most students to consider settling in small country towns. The importance given to the laboratory during their education makes a general country practice seem undesirable.

Of recent years there has been a great reduction in the number of medical schools throughout the United States, brought about largely by the influence of a few men interested in medical education. The results have been for the most part very beneficial. Medical science has advanced so rapidly as to render the closing or the combination of schools very advantageous to the Commonwealth. On the other hand the Massachusetts Medical Society must regard with keen regret the closing in Maine of the Bowdoin Medical School after a most honorable record of one hundred years, and must rejoice over the continued prosperity of the Medical School of the University of Vermont, even in the face of many discouragements. These schools, both in large centres of population, and the Dartmouth Medical School while maintaining its full course, conducted and inspired by men of extraordinary ability, have contributed very definitely to the high standards of medical practice throughout New England. Many hope that Dartmouth may resume its full course.

The reduction in the number of Medical Schools has unfortunately been accompanied by an arbitrary limitation of the number of students accepted by very many of the high grade schools. The reasons assigned for this limitation of enrollment have been the impossibility of proper training of more students than the number admitted. The chief factor in determining this number has been the expense of modern laboratory training and of teaching students in smaller groups according to modern methods. An examination of the budget of a modern medical school reveals that a great deal of the money is spent for investigation as well as for training of students to enter the practice of medicine. Modern scientific investigation is an expensive undertaking, which should not be confused with the training of practitioners.

The limitation in the number of students has rendered the profession liable to the suspicion of adopting the trades union methods. While it is absolutely untrue that selfish motives have been the basis for the action taken, it is true that the great increase in the cost of medical education has come in the training for scientific investigation rather than in the training for practice.

We would occupy a stronger position with the public if we had a little of the faith of President Eliot when, in dissenting from the policy of limitation he expressed the belief that if it were shown that the Harvard Medical School could not afford to accept more than one hundred and twenty-five students each year an appeal for larger funds should have been made to a generous public from whom in his opinion the needed money would have been obtained, especially as he pointed out that the great plant, with the construction of which he was so closely identified, was intended to accommodate classes of two hundred.

At the same time there have been proposals for a further lengthening of the medical course. The tendency has been to add constantly to the amount of detailed knowledge taught. It has become so obvious that no student can now be taught all that is known in medicine or even in any of its major branches that at last a reaction has set in. Time is now set aside in which the student is supposed to think for himself, rather than to be fed knowledge. Some of the details formerly taught have been eliminated but it may fairly be questioned whether minor changes made in the curriculum have reached the root of the evils of medical education. Though some details have been elimi-

nated not much good can be accomplished until more emphasis is placed on the true essentials of anatomy, physiology and pathology. No detail of today is likely to be the detail of tomorrow. But the basic facts will not change.

If in surgery the principles of inflammation are fully understood much of the detail now taught might be omitted with definite advantage. Yet how little attention is paid to the pathology and the treatment of minor infections which make up the bulk of early surgical practice. A thorough knowledge of these simple processes would impart an understanding of appendicitis and osteomyelitis not otherwise obtainable.

As Osler said that all medicine could be taught in the study of pneumonia, typhoid fever, tuberculosis and syphilis, the surgeon might equally truly say that all inflammations could be taught by the study of boils. And if there were added an adequate study of simple epitheliomata a good knowledge of all tumors might easily be acquired. The study of the fundamental medical sciences has unfortunately been kept separate from their practical application.

In anatomy great attention is given to the details of osteology which have little significance, while the lymphatic system which is of such tremendous importance in both medicine and surgery is sadly neglected. The sympathetic nervous system and the ductless glands receive scant attention.

Fortunately in physiology more attention has been given to the practical bearing of the subject. Yet how little is taught medical students regarding the physiology and pathology of muscle. Muscles are constantly subject to disturbances of function for the relief of which advice is sought. Yet practically nothing is taught regarding organic and functional disturbances of muscles, and as regards treatment only a vague idea that electricity, various forms of heat and massage may be of benefit. The interest aroused of late with reference to infantile paralysis has stimulated interest in the methods of treatment of this severe form of organic disease.

The neglect in our schools of the various forms of physical therapeutics has made us ignore methods of treatment which definitely benefit patients. The importance given to laboratory methods has made us careless in the recognition and treatment of the common functional disorders which make up so large a part of medical practice.

The Massachusetts Medical Society cannot regard with indifference the growth of the various cults, which is in great part explained by the sins of medical education and practice as well as by the great truth enunciated by Mr. Barnum.

Homeopathy began before medical science had made much headway. It served a most useful purpose as a protest against heroic, unnecessary, and often harmful treatment. It brought out the truths that the vast bulk of ailments are functional disturbances and that most acute diseases are self-limited.

At the time when medical science was beginning to make great strides Christian Science had its origin. It is not too early to look back upon the growth of this cult as a protest against a neglect of the psychological factors in functional disorders. Sporadic and for the most part abortive attempts to combine spiritual and medical healing have been the direct result of the Christian Science movement. The waning power of this cult is due to the recognition on the part of physicians that psychological factors are of importance in treatment and to the growth of new fads which inculcate the doctrines of hope and optimism under new names and in new dress. Because the medical profession neglected certain truths the psychoanalysts came into prominence, and, taking advantage of the neglect of others, tremendously over-emphasized the importance of their work. There followed the psychological clinics in our hospitals which, crude at first, will gradually assume a useful place and one in proportion to their accomplishments. In the wake of all this ferment has come the development of the mental hygiene movement, admirable in its motive but certainly at times absolutely unreasonable in the extent of its pretensions. Yet through all these changes, among those who have been brought up to regard strict medical science as the chief reliance of the physician, there can be traced a growing recognition of the importance of the psychological factors in diseases. Scientific medicine lost sight of much that the wise old time physician never neglected.

Osteopathy is undoubtedly having an influence on medical practice. Chiropractic flouts all medical knowledge and its followers are attempting to break down the laws safeguarding the public from ignorant practitioners. The followers of these cults bitterly oppose each other. If either does good it is through mental suggestion combined with a limbering up of stiff muscles and joints and increased bodily activity.

The public is little concerned with the grotesque theories on which these cults are based. They look for somebody who by any means whatsoever makes them feel better. Constipation, physical inactivity, mental fatigue and depression are at the bottom of a great majority of human ailments. We have no right to ask that these ailments shall not be treated in any way which gives relief to the patient provided the practitioner is required to have sufficient knowledge to recognize and treat properly diseases dangerous to the individual or to the community.

Fortunately deaths resulting from neglect of

treatment or from harmful treatment by the practitioners of the cults are becoming more rare. The public is being educated to a recognition of the conditions under which they can with safety receive treatment based in great part on mental suggestion, with the addition of either a physical or semi-religious factor. Any relaxation in the legal requirements for practice would however be most dangerous.

The best method of imparting information to the public is through the individual physician. The contact between physician and patient should be most happy, but in some ways the growth of medical science and the tendency to specialization have impaired the close and intimate friendship which was formerly the rule.

The results in the treatment of many serious organic diseases are infinitely better as a result of increased knowledge and better care given, but in the treatment of the more common functional disorders and milder diseases much has been lost. The specialist is ignorant of many conditions with which the family physician is familiar. Important factors are neglected. The greater the number of specialists the less is the sense of personal responsibility on the part of any. Multiple consultations whether initiated by the patient or by the family physician are often unsatisfactory. The expense involved is frequently excessive and can be justified only by results to be attained in no simpler way. Medical care must be so simplified that it shall not be unduly expensive. This can be done by eliminating consultations and laboratory examinations unless there is reason to believe that these will really aid in clearing up an obscure diagnosis or in assuring better treatment. It can be done if the family physician is qualified to take intelligent histories, to make careful and accurate physical examinations, to make the requisite routine laboratory tests, to differentiate functional from organic disease and to treat the patient intelligently and with understanding. The consultant then may be called upon to solve special problems which are formulated in the mind of the family physician. The medical consultant, however, must not be content to examine the one organ or part of the body in which his interest is greatest, nor must the surgical consultant become content to do any operation unless in his own independent judgment it is wise. Under no conditions whatever is it justifiable for one consultant to refer a patient to another consultant. The consultation in the office of the specialist must be solely between the referring physician and the consultant. If further consultations are needed these must be arranged by the regular physician and according to his judgment. In the vast majority of cases diagnosis is perfectly clear without consultation.

All will admit the value of the diagnostic clinic in the difficult and obscure disease, but the value of the findings must always depend upon the assembling of all the facts, a careful estimate of their relative importance and determination upon a course of treatment by one physician with reference to the one particular patient and his peculiarities and environment. The clinician must be the final authority.

The people should know what is and is not possible in medicine. The discoveries in so many lines of science have been so amazing that vast opportunities are open for fraudulent claims in medicine. Popular education is the only method of combating the credulity which leads a portion of the public to accept quackery as progress. It is not enough to state that scientific advances do not apply to the fraudulent claims of impostors. We must show why they do not apply. The elaboration of diagnostic methods, the multiplicity and expense of surgical operations, the increasing cost of medical, nursing and hospital care are all matters which affect the public in their relations with the medical profession. Contact between patient and physician must be kept as direct, as intimate, and as personal as modern medical science will permit.

Allied professions should not become too much carried away by scientific advances. The proposals to make Dentistry a branch of medicine and surgery seem to many a move which will not be for the public good. Relatively few dentists intend to become oral surgeons. The way is open now for those who so desire to fit themselves.

The Profession of Nursing is supposedly auxiliary to the Profession of Medicine. Modern medicine and surgery would be impossible but for the aid of trained nurses. The multiplication of training schools in association with an increasing number of hospitals has been of great benefit to the public, but the demand for nurses has far exceeded the supply. The fields opened up by industrial, school, district, public health, tuberculosis and infant welfare work have absorbed so many nurses that the laws of supply and demand have increased terribly the cost of sickness. It makes little difference how nursing care is attained. Whether by the training of attendants or by simplifying the basic training of the nurse who intends to do private work the good of the community demands less elaboration, while at the same time even better training may be given those intending to take up more specialized lines of work. Much educational work, particularly in the fields of public health and infant welfare, must be done by nurses. It is absolutely essential that such work be done by those well trained and of such character that their teachings will be so sound, conservative and practical as to command the respect of the community.

Medical progress accounts in part for some most unpleasant relations between the physician and his patient, or more often his lawyer. The number of suits for malpractice is appalling.

Among the members of this Society insured under the policies issued specially to them more than one in every twenty has been sued or threatened with suit in the past year and a half. Surgical operations with results or complications displeasing to the patients; results from fractures which do not satisfy the patients; infections occurring as a result of accidents; disagreeable effects from the use of the X-ray, are the more common grounds upon which these suits are based.

In many cases the suit appears to be instituted purely for blackmail. There is good reason to believe that often the cause is bolstered up by perjury. The number of cases is increasing. Standing together and fighting to the limit in defence of honest medical and surgical practice is the first duty of the profession, and as a necessary corollary the condemnation of improper practice is equally essential. But that is not enough. Conspiracy, perjury and subornation of perjury must be detected and prosecuted. The conviction and adequate punishment of one blackmailing patient or lawyer would instantly stop a great proportion of this abuse.

Education of the public regarding what surgery can and cannot do and regarding the qualifications of surgeons for their work; regarding the results to be attained in the treatment of fractures; regarding the infection from accidental wounds; and regarding the dangers of the X-ray are also essential to such an understanding as will limit unjust litigation. Thus will the popular feeling of confidence in the medical profession be enhanced.

The outlook for the future is bright. In medical as in other educational matters the pendulum swings. There are clear indications that many men influential in medical education realize what has always been plain to the thoughtful rank and file of our profession and to the great mass of the people: that the first function of our schools is to supply the Commonwealth with intelligent, thoughtful, sane and resourceful clinicians. Such men are essential for the standing of the profession in the estimation of the public. There is as much reason to expect great advances and discoveries from such men in the future as in the remote and recent past. The laboratory worker recognizes the value of clinical observations. The clinicians will more and more seek the aid of the laboratory as the laboratory becomes an aid to the physician. There need be no fear regarding the lure of the laboratory failing to attract the thoughtful practitioner of medicine. The discovery of insulin is too recent to make this a possibility.

The Medical Schools by means of lectures have for a number of years undertaken to inform the public upon medical methods in a splendid way. Various District Societies have made a beginning along similar lines. Other societies are holding public meetings. In these movements there is great promise of a better understanding on the part of the public of the limitations and the resources of modern medicine and surgery. As the public realizes how our limitations have been made less year by year the sound respect of the vast majority of the people for the medical profession must increase. And with a better understanding of what is being done for individual and public health the public will pay the necessary price in money and more particularly in the slight sacrifice often necessary in personal comfort or convenience. Legislative recognition of the tremendous advances in public health is inevitable.

The purpose of the Society to take its part and to coöperate with the people in matters relating to public and individual health is shown by the activities of the past, by the cooperation in numberless public movements for better health conditions, by the formation of recent committees upon cancer control, health examination and public information.

The activities of the Society and of the individual members in working together and in cooperation with the public for better conditions have begun. They must increase in numberless ways, some of which are not yet foreseen.

The fads of medicine have in the past been self-limited diseases. There is no reason to suppose that the character of these diseases has changed. The more virulent the infection the more quickly is resistance developed.

From the cults we have learned some painful lessons in the past. If they contain any element of truth, no matter how grotesquely set forth, it is seized by the regular profession and the cult dies. Fraud can never endure long.

This Society is maintaining higher ideals of service to the community than it ever has in the past. Today the facilities for exerting its influence are greater than ever before. The JOURNAL now voices the sentiments and upholds the ideals of the profession of Massachusetts as never before. But the Massachusetts Medical Society and the other New England Societies are working individually. The ideals and the standards of the medical profession of New England are not surpassed in any part of the world. It is not too much to hope that in some manner or other the various Medical Societies of New England, while maintaining their identity and initiative unimpaired, may unite to gain for the Medical Profession the power as a civic force to which it is entitled by what it has done, is doing and will do for the public good.

CONCENTRATED FOOD FOR THOUGHT

Mr. E. E. Rittenhouse of the Equitable Life Assurance Company in his report to the life insurance presidents says:

In your easy-going optimistic way, you are cheered by the fact that the general death rate is declining. You fool yourself with the notion that this means a green old age for you.

The Effect of Various Constitutional Factors Upon Fertility*

BY DR. DONALD MACOMBER

BEFORE proceeding to a discussion of the subject matter of this paper it is important to get the distinction between sterility and lowered fertility clearly in mind. In the past the term sterility has been applied in a very loose manner to all cases where there has been an inability to produce normal living offspring. It is true that in their discussions of sterility most textbooks recognize the existence of cases where the re-marriage of the two partners to a sterile marriage has resulted in normal children on both sides. No adequate explanation has been offered for facts of this kind, and such obscure ideas as individual incompatibility are the only explanations which have been advanced. Recent studies in animal breeding make it evident that this is far from being a rare phenomenon and, in fact, when some artificial means is employed to reduce fertility it becomes a very common occurrence.

Animal breeders have long recognized two fundamental principles which govern the fertility of an individual. The first needs only to be stated to become self-evident; it is that individuals vary in their degree of fertility as they do in any other anatomic or functional characteristic. The second is that it is possible through environmental influences to reduce this fertility or, if we are dealing with a fertility which has already been reduced, to raise it by supplying favorable external conditions. It is the application of these fundamental concepts to a study of human marriages which has forced us to revise our ideas on human sterility. Actual and irremediable sterility from developmental or pathologic causes does of course exist; but the very fact that a larger and larger percentage of cases is capable of being cured of the sterility makes it evident that we are here dealing rather with a lowering of fertility.

Some new form of classification then becomes necessary and this is particularly important because the possibility of treatment and the outlook for success with that treatment depend on the class to which the individual case is assigned.

It is proposed to employ the following method of classification which, while involving no new principle, does allow us to re-arrange the old clinical entities in a manner which will conform to the newer hypotheses.

First we must distinguish between actual and permanent sterility and functional sterility where the chief factor is in reality a lowering of fertility. Actual sterility, which is always permanent and irremediable, may be developmental or acquired. The developmental cases are usually rare and are adequately described in all treatises on sterility. They include absences of various important parts of the genital tract in either sex, or cases of infantilism where there is an entire failure of development, such as infantile uterus or undescended testicles. There are many interesting variations from an embryological point of view, but practically they need not concern us here. Actual sterility may also be acquired due to the operative removal of testicles or ovaries, or to the atrophy which may follow orchitis from one cause or another. Mumps, trauma and excessive exposure to the X-ray may all lead to complete atrophy and, finally, there is the physiologic atrophy which appears in both sexes with age. This class of actual sterility is therefore a small one and relatively unimportant in contradistinction to the second functional sterility which is large and of great practical importance since if the appropriate means can be found all cases are susceptible of greater or less relief.

This second great class of functional sterility or, as we prefer to think of it, of lowered fertility can be subdivided into two main groups, where the lowering of fertility is due to the effect, either direct or more remote, of pathologic lesions of the reproductive tract itself, and where it is caused by the secondary action of various constitutional factors. It is with this second group that we are chiefly concerned this evening, but for clarity it is necessary to devote a few minutes to the discussion of pathologic lesions of the genital tract and their effect upon fertility.

This effect may be, and often is, purely mechanical, but it may also be produced by an alteration of the physiology of the whole tract or of any important part thereof. These two effects are often produced simultaneously by the same lesion, but not infrequently are seen as separate entities. Familiar examples of the first, where the effect is entirely mechanical, will occur to every one, and one or two may be mentioned as closed tubes, where the tube itself is still normal and the ostium closed by adhesions, and obstructions in the male tract seen in certain uncomplicated cases of old gonorrhoeal epididymitis. Most cases, however, where the lowering of fertility is due to the presence of a pathologic lesion show various alterations in the physiology either in whole or in part. It is most important, therefore, in dealing with these cases to realize this coexistent abnormality of function since the mere removal of the pathologic lesion will not alone be successful unless it is performed with recognition of the altered physiology, and is followed by treatment calculated to enhance the already lowered fertility and to restore the altered function to normal.

*Read before the Gynecological and Obstetrical Section of the Cleveland Academy of Medicine, November 23, 1923.

For instance, it may be good surgery to perform a hysterectomy for multiple fibroids of the uterus, but it could hardly be considered good treatment for the relief of a functional sterility, or, again, a curettage may be sufficient to relieve a menorrhagia due to hyperplastic endometritis, but it will not as a rule cure a functional sterility unless the coexistent anaemia is also treated. In other words, it has of late become increasingly evident that it is chiefly by the use of what I shall call constitutional factors, but which might perhaps better be designated as environmental factors, that we have our best means of raising an already lowered fertility; and this is so whether the fertility has been previously lowered by some pathologic lesion of the genital tract, or by abnormality of these various constitutional factors themselves.

It must be realized that fertility is not merely a function of the sex organs alone as digestion is of the intestinal tract, but it is also a function of the organism as a whole and as such undoubtedly subject to the laws which govern heritable characteristics in general; for instance, it is well known that many strains of pure bred cattle carry with them extremely low fertility while in other strains the fertility is much higher; it is also known that inbreeding definitely reduces fertility though if accompanied by careful selection there is a point below which the fertility does not tend to fall. To state this in a somewhat different way, every individual receives from his parents a certain degree of fertility which is fixed and cannot be increased. He may, however, if submitted to adverse environmental conditions, either external or autogenous, suffer a lowering of this original degree of fertility. In our treatment of functional sterility it is important to remember these facts. We can with appropriate measures always hope to raise an already lowered fertility, but we can never change the inherited level of fertility of the individual, nor raise a lowered fertility above that point. From this discussion it is evident that our treatment of functional sterility will be limited to the removal by surgical means of the various pathologic lesions of the genital tract which may be factors in the causation of this functional sterility, and to the manipulation by any means in our control of the various factors, constitutional or otherwise, which affect the environment, and therefore the function, of the various sex organs.

It is important therefore to consider in detail these various factors of the environment. Most of these are constitutional and are to be discovered in the individual himself. There are, however, others of a more general nature which may be mentioned for completeness. These general factors in the environment are those which affect whole races. They are physical and chiefly climatic; for instance, it is well known that man, along with other animals, is much more prolific in warm climates than in arctic ones. There are other little understood general conditions, but they are relatively unimportant and need not concern us here.

Those environmental factors which I have called "constitutional" meaning by that that they are to be discovered by a study of the body and habits of the individual are, however, of the greatest practical importance. They are to be found as resulting, first, from the toxaemias of general disease, of chronic poisonings from focal infections and from such intoxications as are caused by drugs, chronic alcoholism, lead poisoning, etc.; second, from certain deficiencies in the food such as those of iron, iodine, calcium, proteins, or the various Vitamines; third, from poor development of the body as a whole, a failure which is nearly always associated with a similar partial development of the sex organs, though often of such a relatively minor degree as to escape detection; and lastly from various disorders of an emotional nature (these last being associated with derangements of the sympathetic nervous system and of the glands of internal secretion).

It is well known that advanced cases of tuberculosis or syphilis are of such lowered fertility as to be to all intents and purposes sterile. Similarly, serious derangements of the general metabolism, such as are seen in many cases of diabetes, are likely to produce marked lowering of fertility. It is not so generally recognized that severe acute illnesses, such as typhoid, scarlet fever or pneumonia, to mention only a few, may also for the time being reduce the fertility below a point where reproduction is possible. In both instances it is probable that this effect upon the fertility has been produced by the toxaemia of the disease. It is also not uncommon to see fertility affected by the toxaemia from a focal infection. Toxaemias of this nature are as a rule milder than the toxaemias arising from more generalized infections, but in spite of their mildness long continued exposure to them may cause very marked effect in lowering fertility.

The common foci of infection in teeth or tonsils, or more rarely in the sinuses, the appendix, gall bladder, etc. are not so frequently responsible for lowering fertility, but we have seen such instances, as, for instance, the case of a woman with bad tonsils who had been sterile for nine years, and who without other treatment conceived within two or three months of a tonsillectomy. More important than these last mentioned sources of infection is the so-called autointoxication from overloaded bowels. The action of this condition is also two-fold—first, through the absorption of poisonous material into the system with its subsequent effect in altering physiology, and, second, due to the actual weight of the overloaded intestines in causing chronic congestion of the pelvic organs. In fact, we have seen a number of sterilities of long

duration relieved in a very short time by clearing out overloaded bowels. It goes without saying of course that due to the anatomical differences between the sexes this cause is more often operative in the woman. This toxic effect of focal infection is much enhanced where the focus happens to be in the genital tract itself. The most extreme examples of this are seen in chronic infections of the prostate or cervix—here the effect is not only constitutional, due to absorption of the poisons, but is also local in its action upon the vital secretions in either sex. Other examples of these doubly important foci may be found in the vesicles in the male or in the tubes in the female. In addition to these various kinds of poisoning to which the body is subject and which may in susceptible individuals serve as causes of a lowered fertility we have other more gross types of poisoning which may occasionally be operative. Extreme cases of drug poisoning are well known to be sterile, and it is probable that the use of any habit forming drug cannot help being deleterious in this regard as well as to health. Similarly, chronic alcoholism, lead poisoning or poisoning with other metals cannot help affecting fertility in some individuals if only through the general health. The importance of these poisonings needs only to be mentioned to be appreciated and the treatment is obviously the removal of the source of poison as soon as it has been discovered.

I shall now pass on to the second group of "constitutional" factors. This group is made up of certain defects in the diet. It has been little recognized in the past, but is just beginning to receive the attention which its importance deserves. Some of these deficiencies have long been recognized through their secondary effects, and it has even been recognized that the treatment of these secondary effects may relieve sterility. It is only, however, since the diet has been scientifically investigated by the biologic method that the real significance of these secondary effects as resulting from definite deficiencies has been perceived. It is possible, even probable, that with increased knowledge the list of these deficiencies which may affect fertility will be enlarged. At this time it is impossible to do more than briefly sketch in a few of the more important features of this subject. From among the various inorganic elements of our diet iron, iodine and calcium have been chosen since at the present state of our knowledge they seem to have a greater effect upon fertility.

The importance of a deficiency in iron has only to be stated to be recognized since the supply of oxygen to the reproductive organs must be most important to normal functioning. When it is remembered that in the female the function of menstruation involves the periodic loss of quite considerable quantities of blood the importance of an abundance of iron in the food cannot be exaggerated. The most available sources of iron in the diet are found in lean beef, eggs and whole cereals. Iron is also to be found in most vegetables, but the amounts of these which must be consumed to give an adequate amount are so large as to make them unsatisfactory as the only source. Where an anaemia of even moderate degree is present it is usually necessary to give iron in some medicinal form in addition to giving it through the food. This is usually done best by hypodermic injections.

There are two other inorganic constituents of the diet which are extremely important. Before this audience and in this locality I need only mention the necessity for iodine since this is so well known here. It is perhaps not so well known that where there is deficiency in iodine with its resulting simple goitre, there is very apt to be a corresponding derangement of ovulation. This interdependence of the thyroid and ovaries has long been recognized and most text-books of gynecology or obstetrics state that there is a physiologic enlargement of the thyroid with menstruation and with pregnancy. It has seemed to me that these enlargements, especially since we have learned that most of those occurring under other circumstances are due to a lack of iodine, have probably also a similar cause, but that here the deficiency may not be so extreme and is brought out only by the extra strain on the whole organism at these times. However that may be, since we have had our attention called to it, we are finding more and more cases of palpable thyroids where operation has disclosed the so-called "retention cyst," that is, non-ovulating, ovaries. Iodine may occur as a contamination in table salt where this has been made from sea water, but the chief source is derived from vegetables. In regions where the soil contains little or no iodine the vegetables also will contain none and in these regions the prophylactic use of sodium iodide may well be a factor not only in the prevention of goitre, but also, though of course to a far lesser degree, in the prevention of sterility.

The other inorganic element which is important in this consideration is calcium. The chief reservoir of calcium in the body is to be found in the bones and teeth. It is less well known that calcium is one of the normal constituents of the blood. Aside from its effect upon fertility there are several other conditions which are recognized as due to a lack of this important element from disturbances in its metabolism. Rickets is recognized as due to such a disturbance especially if there is also trouble with phosphorus. Tetany in children is supposed to be due to a lack of calcium, or at any rate is relieved by its administration and osteomalacia is due to a similar lack during pregnancy. It has even been suggested that in certain cases eclampsia may

be caused by a similar lack. The demand upon the mother for calcium by the growing foetus is enormous and though most pregnant women escape serious consequences, even where the diet is markedly deficient, they only do this because of the large calcium reserve present in their bones and teeth. It is quite remarkable how little teeth are affected by a pregnancy provided a diet rich in calcium is taken. It has been observed by many investigators that calcium plays an important part in fertility. McCollum[1], Osborne and Mendel[2], Blair Bell[3] of Liverpool and many others have added their confirmation. Our own work[4] with rats has proved also that diets defective in this element are most potent in producing sterility. Our attention was first called to this while attempting to explain an abnormally high percentage of sterility in the rats which were fed on our supposedly normal control diet. Investigation showed that the powdered chalk—calcium carbonate—which was supposed to form an important percentage had been inadvertently replaced by French chalk, which is nothing but talc, a form of the silicates of magnesium and aluminum.

This same work which we did in investigating the effect of various dietary deficiencies upon the fertility of rats proved also that where the percentage of protein in the diet is abnormally low, or where the diet was so deficient in any of the Vitamines as to affect health, sterility would be produced. The effect of low protein has long been known in the feeding of domestic animals. McCollum[5] proved that not only the percentage of protein is important, but that this protein must be derived from more than one source. He found, for instance, that when cows are fed exclusively on wheat, both the grain and the plant, the calves are always premature and almost invariably born dead. Breeders of swine say that they can prevent the sow from eating her young by feeding her a diet containing an adequate percentage of protein and that if they do not some are certain to be devoured. In regard to the Vitamines, we believe that deficiency affects general health and that the reproductive function suffers indirectly as a result of this. Evans and Bishop[6], however, have recently reported work which suggests the existence of a specific Vitamine, the absence of which produces a sterility in rats.

Without going into further detail it would seem that enough has already been said to bring out the great importance of this second group of so-called constitutional factors. It is a subject which has received little attention in the past, but which we believe will assume greater and greater importance as our knowledge increases.

The third group, as we have defined it, includes those cases where there is poor development of the body as a whole without the presence of anything suggesting definite disease. Such cases are common in either sex and are well recognized by the orthopedists because of their poor posture and bodily mechanics in general, as well as by the internists because of the frequent presence of enteroptoses and their attendant symptoms. It is not so commonly recognized that many women of this general type are also sterile, or rather of low fertility. The general picture is of course well known to each one of you. Where the condition is extreme, with poor general nutrition and especially where there are pronounced nervous symptoms, there is apt to be a similar failure of complete development of the reproductive organs. Girls of this type are very apt to suffer extremely from dysmenorrhoea, particularly during youth. Many of course outgrow this condition and it is not at all uncommon in taking patient's histories to find that they suffered extremely with their periods for some years after they first appeared. When one of these patients is examined it is common to find a sharp anteflexion of the cervix upon the body so that it lies in the axis of the vagina well forward toward the symphysis. If an attempt is made to force the cervix back with the finger it will be found impossible to do this even under an anaesthetic because of the short anterior attachments. This condition of the cervix is normal in childhood, but at the time of puberty there should be a development of this anterior wall of the vagina, together with a lengthening of these forward attachments of the cervix at the same time that the fundus is undergoing its development. It is a failure of this process which causes anteflexion and dysmenorrhoea. Where this condition persists into adult life and after marriage it is almost certain to render the individual sterile. This is due in part to alteration in the secretions of the cervix so that they mechanically impede spermatozoa, or, if even mild infection becomes superinduced, actually kill them; the sterility of these cases may also be due to the development of trouble in the ovaries in some reflex manner, or because of the poor general health. In the male low fertility in these patients showing poor development may not have any definite local results which can be demonstrated. Sometimes, however, the testicles are rather small and flabby, but it is only from microscopic examination of the semen that one can obtain direct evidence of this condition.

We now pass on to a discussion of the fourth and last group of low fertilities which arise from constitutional causes. This group is not perhaps comprised of a single clinical entity, but all cases classified under this heading show some disorder of an emotional nature, and as a rule some evidence of alteration in the function of one or more of the glands of internal secretion. It must be remembered that both testicles and ovaries belong to this class of ductless glands, and though often these cases at first glance show only alteration in their purely reproductive

function (that is, the formation of ova and spermatozoa), nevertheless there is almost always present under these conditions some alteration in the secretion of the interstitial cells. This is of course much more frequently true in the female than in the case of the male. It is important in a consideration of this subject to realize that ovaries and testicles, along with all the other ductless glands, receive their nerve supply entirely from the sympathetic nervous system. This nervous system, as you need only be reminded, communicates with the chief parts of the central nervous system but is in the main quite independent of it. It is in no way subject to the control of the will. It does, however, take part in those generalized mental and bodily states which we call emotions. We consider this subject of such importance that at the risk of boring you with a recitation of facts already well known, I am going briefly to recapitulate the functions of this vital part of the nervous system. Fibres of the sympathetic go to all the blood vessels and all the unstriped muscle throughout the body. They go to all the glands such as sweat glands, lachrymal glands, and those which are found throughout the digestive tract. They not only control the distribution of blood, but also the rate at which the heart beats; similarly they control the outpouring of all the digestive secretions and the motions of stomach and intestines which carry the food on. Lastly, as has been said, they go to all the ductless glands among which must be reckoned the ovaries and the testicles.

It is interesting to see how the emotional states of the mind find expression in the activities of this nervous system throughout the various organs and tissues which it supplies. It is even claimed by some psychologists that these activities of the sympathetic nervous system are the cause of our emotions and not the effect. Be that as it may, the two are always associated. For instance, in the strong emotion of fear the face is bloodless, the tongue cleaves to the roof of the mouth, the extremities are bathed in a cold sweat, the pupils are widely dilated and there is a palpitation of the heart. In extreme cases there may be involuntary urination or defaecation or there may be vomiting. The reason for recapitulating these familiar facts is to prove my point that strong emotions affect every organ or tissue to which the sympathetic fibres are supplied. It cannot help being true therefore that there are effects produced even though we may not be able to demonstrate them visibly upon the extremely delicate functions of ovaries or testicles. It should also be remembered that chronic emotions, which are so common in nervous subjects and which are quite inadequately spoken of as states of nervous fatigue, chronic worry, or a run down nervous condition, also have their effect upon these organs and while the effect from any one stimulus may not be extreme, when these stimuli are added together from day to day there is often a most serious result. That fertility is not always affected is due to individual differences of constitution or of circumstances. Some neurotic patients suffer from extreme headaches, others have weak eyes, others again have poor digestion, and in some cases we find the fertility markedly reduced. With the male the lowering of vitality of the spermatozoa can actually be seen under the microscope, but with the woman there is no such direct evidence except at operation. When the ovaries of patients of this class are examined after the abdomen has been opened they will often be found to be enlarged and tense, and to contain on section numerous small thin-walled cysts. Microscopic examination of sections of these cysts fails to show any ova and the ovaries themselves do not exhibit the scarred appearance characteristic of the normal functioning organ. We believe that this condition has been caused by some abnormal action of the sympathetic nervous system either through the emotions, or secondarily from the effect of over secretion of some one of the other ductless glands. The proof of such a statement cannot be produced in the present state of our knowledge of these matters. We can only state that this retention cyst condition of the ovaries is most apt to appear in nervous high strung individuals, that they are permanently sterile if untreated, and that the correction of the local condition by operation, when accompanied by treatment of the constitutional cause, is successful in a large majoriy of otherwise uncomplicated cases. These observations are also rendered increasingly probable by finding lowered fertility in the male from similar causes. Here, as has been said, the result can be observed under the microscope and the improvement under treatment can be watched in a similar manner. With the man the only form of treatment which we have found to offer any hope of success is the constitutional one alone, and the fact that this is in very many cases successful goes far to prove that the original cause of the infertility must have been also of constitutional origin.

In conclusion, there are several points which I wish to emphasize. In the first place it is most important, both in the diagnosis and in the treatment of cases of sterility, to distinguish between actual and permanent sterility on the one hand, and functional sterility on the other. This latter group includes cases where actual pathologic lesions are present as well as those of a more strictly functional nature. The reason for this method of grouping is that fertility is a function and that this function may be disturbed by some gross lesion, in which case the removal of the abnormality by surgery becomes necessary before the function can be restored; or it may be disturbed by the secondary action of certain factors which I have called constitu-

tional, and can then only be relieved by methods which recognize this causal relationship. These constitutional factors may be conveniently divided into four groups—first, the toxaemias, second, the dietary deficiencies, third, the cases of poor development, and fourth, those cases where there is derangement of the functions of ovaries or testicles associated with general alterations in function of the sympathetic nervous system in its various manifestations.

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The Value of Insulin in the Utilization of Carbohydrate*

BY W. H. OLMSTED, M. D., AND S. H. KAHN, M. D., WITH THE ASSISTANCE OF ELEANOR CASE AND NAN TAUSSIG

OUTLINE

Introduction.

Choice of Material and Methods.

1. Cases selected.
2. Insulin standardization and administration.
3. Control of food intake.
4. Laboratory methods.

Plan of Procedure.

1. General Plan:
   (*a*) Diet mixtures.
   (*b*) Tolerance of patient.
   (*c*) Periods of insulin administration and diet increase.
   (*d*) Periods of high protein feeding.
2. Calculations of
   (*a*) Protein sugar.
   (*b*) Total sugar.
   (*c*) Fat sugar.

Discussion of Results.

1. True or Woodyatt's ratio.
2. Explanations of high ratios obtained when diets were increased.
3. Ratios obtained on high protein periods.

IT was stated in an earlier paper[1]* that the carbohydrate value of a unit of insulin has been found to be between one and two grams. For every unit of insulin administered to the diabetic one to two additional grams of carbohydrate can be tolerated. The value of such a ratio is manifestly important. The purpose of this paper is to present the data obtained in this clinic bearing on such a value. Banting, Campbell and Fletcher[2] state that a rough approximation is 1-1.5 gms. of glucose to one unit of insulin. Wilder[3] uses the ratio of 2 gms. of glucose to one of insulin and Woodyatt[4] agrees with the Toronto group in estimating the carbohydrate value of insulin at 1-1.5 gms. Allen[5] disagrees with all of these observers finding no quantitative relation between a unit of insulin and the carbohydrate made available through its use.

*From Department of Internal Medicine, Washington University, St. Louis.

CHOICE OF MATERIALS AND METHODS USED IN COLLECTING THE DATA

These may be discussed under four heads: Case selection and management; standardization of insulin; control of starch intake and finally laboratory methods.

Case Selection and Management. If the carbohydrate value of administered insulin is to be accurately measured, the insulin production of the patient ought to be as small as possible, for the smaller the amount of insulin produced by the patient, the smaller will be the errors from variation in production. This means that suitable cases for determining the carbohydrate value of administered insulin should present a diabetic condition of severe degree. It is also important that the disease be of sufficient duration to have the tolerance at a standstill. If the sugar excretion was constant on the admission basal diet for a period of seven to fourteen days, the patient was accepted as suitable for this work. Ten such cases were selected. Three mild cases whose sugar excretion was constant were studied; they were included to show the effects of high protein feeding when insulin was not necessary in treatment. Patients showing great emaciation, with weight below 90 lbs., were rejected as subjects for this work for the reason that such undernutrition is not conducive to good digestion and absorption of food stuffs. Only one of the subjects studied was below 90 lbs. Table 2 is the summary of clinical findings in the cases selected. In this hospital one diabetic out of six was found suitable.

Standardization of Insulin. Cases 1, 2, 3, 4, and 9 were given insulin prepared in Professor Shaffer's[7] laboratory. The insulin was first standardized on rabbits in that department and restandardized by ourselves. A unit was considered the amount of material necessary to reduce the blood sugar to .045 in a one kilo rabbit in three hours time. The other cases received

Lilly's* product. The average carbohydrate value of Shaffer's insulin was 1.6 gms. and of Lilly's product 1.46.

The Technique of Administration. As pointed out in the previous paper it seemed to us advantageous to give insulin in a single dose. If less than 40 units were to be administered in 24 hours, the insulin was given in one dose. If more than that amount was used, two doses were given. Insulin was administered at 10:30 a. m. The meal at noon was adjusted to contain from one-half to two-thirds of the twenty-four hour carbohydrate fed. Since the rate of sugar excretion follows the carbohydrate ingestion, it was thought probable that the bringing together of insulin and the larger part of carbohydrate ingestion would result in a maximum insulin efficiency. We are not convinced that one dose of insulin per day is the most efficient way to use insulin, but at present our ratios compare favorably with those reported from clinics where insulin is administered in divided doses.

Control of Food Intake. It is of considerable importance that the carbohydrate fed should be of known value. Table 3 gives the foods used. The carbohydrate foods were those of high percentage of starch. It was felt that the values of these foods would be subject to less variation. The choice of foods is of maximum importance. At best it should be remembered that the estimated food intake is subject to an error of 20 per cent. This error is a constant one, and not greatly variable in different patients and at different times. In some cases where lack of bulk was complained of, thrice boiled, finely divided three per cent. vegetables were used. Such cases were exceptional. It has been shown that finely divided and thrice boiled vegetables contain but a mere fraction of a per cent. of carbohydrate. All foods were weighed in raw state and cooked in individual receptacles. Atwater and Bryant tables were used as the source of analyses.

TABLE 3

Foods Used in the Dietaries of Subjects Used in This Research

Carbohydrates	Proteins	Fats
Corn, fresh	Fish, fresh	Cream,
Beans, Lima	Fish, Tuna	16 per cent.
Tapioca	(canned)	Cream,
Corn flakes	Salmon (canned)	32 per cent.
Rice	Chicken	Milk, sweet
Potato, white	Eggs	Milk, sour
Potato, yellow	Veal	Bacon
Oatmeal	Steak, loin	Ham
Macaroni	Consomme	Butter
Bread, white	Brains	
Crackers, soda		
Apple		
Peas		

No food value—agar agar

*This was the "H" unit.

Laboratory Methods. Urine sugar by Benedict's method. Urine nitrogen by Kjeldahl. Total acetone as acetone by Shaffer's method[8]. In our hands this method accounts consistently for 87 per cent. of total acetone bodies. Solutions of pure zine salt have given an average of 87 per cent. of the theoretical. Every voiding of the patient was recorded by the nurse, who estimated but did not measure the amount. When the urine was measured, the total volume was compared with the nurse's record. Great care was used to prevent loss of urine with the stool. Urines were preserved with toluol and kept in our ice box.

PLAN OF PROCEDURE

Diet Mixture: A low protein diet was used, except in those periods when the effects of high protein were observed. The protein in the diet was set at 50 grams. We have experienced difficulty in keeping patients in nitrogen balance when less than 40 gms. of protein was fed. No case has been seen in which nitrogen balance was not easily demonstrated when the diet contained 50 gms. of protein. This level insures the diet containing such important proteins as egg and fresh meats and supplies the phosphorus demands of the body.

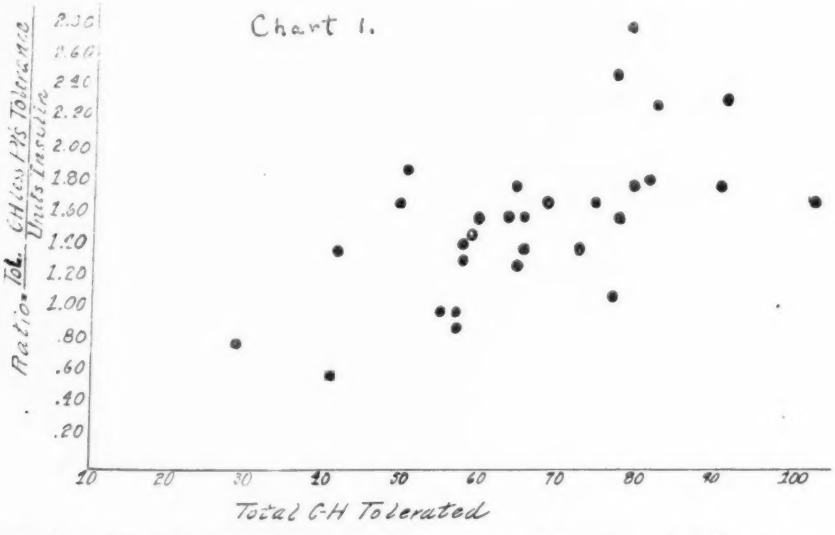
The carbohydrate and fat values were calculated to supply a definite calorie level. The ratio of carbohydrate to fat being 1 to 2-½ grams. Such diets give antiketogenic-ketogenic ratios of 1 to 1.1. We feel that it is a distinct advantage to determine the patient's sugar excretion, and later, his carbohydrate value of insulin on dietary mixtures which follow the same proportions at all levels. The values of diets ranged from 1200 to 2400 calories.

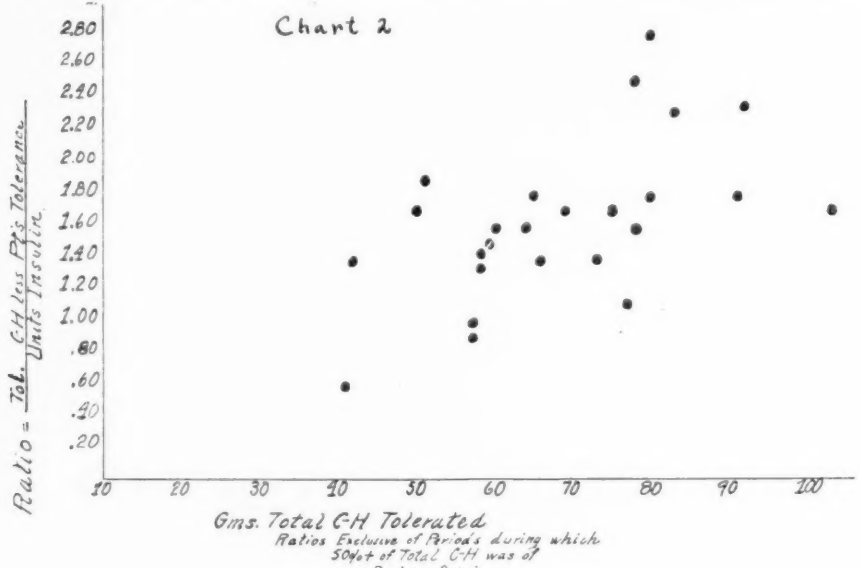
On admission, patients were placed on a diet equivalent to their basal calories, as calculated by the height-weight formula of DuBois. They remained on this diet until the daily urinary sugar excretion reached a constant level. This period of time varied; five days in four cases; six to seven days in four; eight to nine days in four. During this period (called I in the table of case summaries) the tolerance of the patient was demonstrated. By this is meant the total available carbohydrate fed minus the urine sugar. In period II (cases 6-10 inclusive) insulin was administered without changing the diet. Not enough insulin was given to make the urine sugar free. In fact during the whole time that the patients were being used as subjects in these experiments, the adjustment of insulin and diet was such as not to have the urine free of sugar. In the later periods, the diets were increased with or without an increase in insulin. When the carbohydrate fed amounted to 50-75 gms. one-half of the starch was subtracted from the diet and this equivalent of protein sugar was added. Fat remained at the same level during the high protein period as the period before. In some cases, after high protein diet, it was pos-

sible to return the patient to the same diet as given in the period before the high protein period.

Calculations. The protein sugar was found by multiplying the urinary N by 3.3. The use of this figure rather than the usual one of 3.6 is due to our experience with phloridzinized dogs[9]. Total available carbohydrate represented the protein sugar plus the fed carbohydrate. The feeding of starch does not necessarily mean its absorption. In fact, as will be pointed out, we have reason to believe that as little as fifty per cent. of fed starch may be absorbed. The sugar that may have arisen from the metabolism of fat has been estimated and the figures in parenthesis under the heading "total C-H" represent the addition of that increment.

A rough estimate of the total metabolism may be made from data at our disposal. Since most of the basal rates of these patients fell between 1200 and 1600 calories in twenty-four hours and fat metabolism probably was 75-80 per cent. of these (non-protein respiratory quotient .76) then 100 to 125 gms. of fat were being burned during the periods called I. During these periods the patients were in bed. During the later periods when the diets ranged to 2000 and 2200 calories and patients were allowed to be up and about the small ward, the total metabolism probably rose to 1500 to 2600 calories. The fat burned during these periods probably amounted to 120 to 180 grams daily. The glucose from such amounts of fat in the periods when the "tolerance" of the patients were being evalued was 10 to 12 grams while in later periods it amounted to 12 to 18 grams. The greatest increase in any patient would not be over 8 grams. The fat metabolism was calculated with the following factors in mind: Basal calories; gains or losses in weight, and the estimated activity of the patient. It is probable that such methods





are as accurate as those based on respiratory quotients obtained with short periods of observation.

DISCUSSION

Woodyatt[10] has stated that the determination of the sugar value of insulin may best be accomplished by demonstrating the lessening of sugar excretion after insulin administration. To us this method seems to be by far the most accurate one. The subject, as Woodyatt states, must be a severe diabetic, the disease being of long standing. The method rules out as nearly as possible such factors as digestion and absorption. Applying Woodyatt's method to our cases the following ratios were found:

Case	Period	Ratio	Calculated Tolerated Carbohydrate gms.
3	II	1.4	42
5	II	1.0	57
6	II	1.7	50
7	II	1.5	59
8	II	1.4	66
9	II	1.6	66

Average 1.43.

The further discussion of the ratios obtained by ourselves should come under two heads: those obtained when the glucose from starch presumably amounted to more than fifty per cent. of the total available glucose and usually between seventy and eighty per cent., and secondly, the ratios obtained during the "protein shift" periods.

Glancing over the summaries of the cases from one to ten (Table 1) one is struck with the higher ratios obtained during periods when larger amounts of carbohydrate are being fed. The first four periods of cases 6, 7, 8 and 9 illustrate this very well. The sugar of protein origin does not vary more than a few grams. Table 5 is a grouping of all the periods arranged in order of ascending amounts of tolerated carbohydrate. It is seen that in periods where larger amounts of carbohydrate were fed the carbohydrate value of insulin apparently increased. Charts 1 and 2 show this fact graphically. When over 80 grams of tolerated carbohydrate was being fed the ratios averaged between 2 and 3 grams of carbohydrate per unit instead of 1.5 grams. Before one can admit that the efficiency of insulin increased when larger amounts of carbohydrate were being fed, several other possibilities must be considered.

First. The standardization of insulin might not be accurate, being more potent during the periods when high ratios were obtained. Where our own insulin was used the same batch of material was used for an experiment. We have been testing Lilly's product, along with other observers, and find it remarkably uniform in strength.

Second. Could the technique of administration be responsible? One injection a day was used and the doses were usually larger with the larger intake of carbohydrate. If this method were less efficient than multiple injections one might suppose that when larger doses were used relatively lower ratios would be obtained than with smaller doses. Also if much insulin were excreted in the urine[11] more would be excreted with the larger doses. Table 5 shows clearly that the larger intake of carbohydrate is usually accompanied by larger dose of insulin and a higher ratio.

Third. Sugar might be stored as such without being changed by the action of insulin. Richardson and Mason[12] have lately suggested this possibility, pointing out that the diabetic can burn much more than is fed. They found respiratory quotients indicating the burning of large amounts of sugar when patients were starving or being fed protein and fat alone. When carbohydrate was fed, the amounts burned more closely approximated the amounts fed. The larger the amount of carbohydrate fed, the closer the agreement. There is a question in our minds whether a two hour respiratory quotient really indicates the twenty-four hour metabolism. The possibility of storage of "loose sugar" as an explanation of the ratios must be borne in mind. Particularly is this to be considered in cases showing increasing ratios as the diet is increased followed by periods of falling ratios, and larger amounts of sugar in the urine. Case 6 might be so interpreted.

Fourth. The most obvious explanation of the higher ratios found when the larger amounts of carbohydrate were fed is that the patient's own tolerance increasesd when insulin was administered. The ratios are all calculated on the assumption that the patients' output of insulin remained stationary. As stated at the beginning of this paper, great care was used in selecting cases of long standing and especially those that showed a constancy of sugar elimination during the initial period. It should be pointed out that the nitrogen excretion is usually at a higher level during period I than in later periods and that the subject is not usually in nitrogen balance. The carbohydrate derived from protein always amounts to 50 per cent or more of the total available carbohydrate. Since the value of the carbohydrate tolerated by the patient is determined in this period, it is well to remember that the source of this carbohydrate is at least 50 per cent from protein. When the patients being treated for the disease are the subjects of research, it is impossible to discontinue insulin over a period of time long enough to get a check up of determination of patients' own tolerance. Cases 1, 2, 3, 4, 6, 7 and 9 were not in nitrogen balance during period I. Cases

TABLE 1*

SUMMARY—CASE 1

Period Days	Urine Sugar Gms.	Protein C-H N × 3.3 Gms.	C-H Diet Gms.	Total C-H Gms.	Tolerated C-H Gms.	Insulin Units	Ratio C-H / Insulin
I 6 days	29	29	30	59	*30* (40)	0	
II 5 days	41	29	90	119	78 (90)	30	$\frac{78-30}{30} = 1.6$ (1.7)
III 5 days	33	30	76	106	73 (85)	30	$\frac{73-30}{30} = 1.4$ (1.5)

*The detailed day to day data have been omitted for sake of brevity in all cases except 6.

SUMMARY—CASE 2

I 5 days	32	31	30	61	*29* (42)	0	
II 4 days	3.5	19	50	69	65 (82)	20	$\frac{65-29}{20} = 1.8$ (2.0)
III 6 days	8	23	26	49	41 (58)	22	$\frac{41-29}{22} = .6$ (.7)
IV 6 days	8	15	51	66	58 (75)	20	$\frac{58-29}{20} = 1.45$ (1.6)

SUMMARY—CASE 3

I 7 days	43	38	30	68	*25* (39)	0	
II 5 days	17	29	30	59	42 (56)	12	$\frac{42-25}{12} = 1.4$ (1.4)

SUMMARY—CASE 4

I 6 days	26	35	30	65	*39*	0	
II 9 days	0	23	50	73	73	20	$\frac{73-39}{20} = 1.7$ (1.7)

SUMMARY—CASE 5

I 7 days	20	19	40	59	*39* (49)	0	
II 6 days	7	24	40	64	57 (67)	17	$\frac{57-39}{17} = 1.0$ (1.0)
III 4 days	5	22	40	62	57 (67)	20	$\frac{57-39}{20} = 0.9$ (0.9)

SUMMARY—CASE 6

Period	Urine Sugar Gms.	Protein C-H N × 3.3 Gms.	C-H Diet Gms.	Total C-H Gms.	Tolerated C-H Gms.	Insulin Units	Ratio C-H / Insulin
I 5 days	30	33	30	63	33 (45)	0	
II 6 days	4	23	31	54	50 (68)	10	$\frac{50-33}{10} = 1.7$ (2.2)
III 8 days	11	19	50	69	58 (76)	8.5	$\frac{58-33}{8.5} = 2.9$ (3.5)
IV 5 days	5	18	65	83	78 (96)	18	$\frac{78-33}{18} = 2.5$ (2.7)
V 6 days	29	18	75	93	64 (82)	19	$\frac{64-33}{19} = 1.6$ (1.9)
VI 6 days	56	47	38	85	29 (47)	20	$\frac{29-33}{20} = 0$ 0
VII 6 days	50	26	76	102	51 (69)	20	$\frac{51-33}{20} = 0.9$ (1.1)
VIII 4 days	12	23	50	73	60 (78)	30	$\frac{60-33}{30} = 0.9$ (1.1)

SUMMARY—CASE 7

I 5 days	24	29	40	69	45 (58)	0	
II 7 days	5	24	40	64	59 (75)	9	$\frac{59-45}{9} = 1.5$
III 4 days	7	27	60	87	80 (97)	19	$\frac{80-45}{19} = 1.8$ (2.0)
IV 8 days	12	24	80	104	92 (109)	20	$\frac{92-45}{20} = 2.35$ (2.5)
V 6 days	13	55	40	95	82 (99)	20	$\frac{82-45}{20} = 1.85$ (2.0)

SUMMARY—CASE 8

I 8 days	26	18	60	78	52 (64)	0	
II 8 days	10	16	60	76	66 (81)	10	$\frac{66-52}{10} = 1.4$ (1.7)
III 8 days	5	40	30	70	65 (80)	10	$\frac{65-52}{10} = 1.3$ (1.6)
IV 8 days	1-2	22	60	82	80 (95)	10	$\frac{80-52}{10} = 2.8$ (3.0)

SUMMARY—CASE 9

I 4 days	47	38	30	68	21 (31)	0	
II 5 days	6	42	30	72	66 (78)	27	$\frac{66-21}{27} = 1.6$ (1.7)
III 7 days	0	23	60	83	83 (96)	27	$\frac{83-21}{27} = 2.3$ (2.4)

SUMMARY—CASE 10

Period	Urine Sugar Gms.	Protein C-H N × 3.3 Gms.	C-H Diet Gms.	Total C-H Gms.	Tolerated C-H Gms.	Insulin Units	Ratio C-H / Insulin
I 11 days	15	19	30	49	34 (45)	0	
II 5 days	26	20	75	95	69 (82)	20	$\frac{69-34}{20} = 1.7$ (1.85)
III 6 days	28	45	38	83	55 (68)	20	$\frac{55-34}{20} = 1.0$ (1.1)
V 5 days	5	17	75	82	77 (90)	40	$\frac{77-34}{40} = 1.1$ (1.1)
VI 6 days	0	18	85	103	103 (116)	40	$\frac{103-34}{40} = 1.7$ (1.8)

SUMMARY—CASE 11

III 8 days	12	23 (?)	75	98	86 (104)	0	
IV 8 days	29	44	40	84	55 (73)	0	
V 6 days	7	23	75	98	91 (109)	20	$\frac{91-55}{20} = 1.8$ (1.8)

SUMMARY—CASE 12

I 9 days	23	22	50	72	49 (62)		
II 6 days	19	42	25	67	48 (61)		
III 5 days	4 to 0	25	50	75	75 (92)	15	$\frac{75-48}{15} = 1.66$ (2.0)

SUMMARY—CASE 13

I 8 days	5	19	60	79	74	0	
II 8 days	8	42	30	72	64		
III 6 days	0	24	60	84	84 plus	10	$\frac{84+-74}{10} = 1.0+$

5, 8, 10, 12 and 13 were in balance. Comparison of ratios obtained from these two groups does not show any great difference.

It is likely that in a few instances there is a gain in tolerance or increase in patients' own output of insulin. Case 8 seems to be such a case. The carbohydrate fed was kept at the same level (60 grams) in periods II and IV; the insulin dose was the same (10 units) and yet the ratio increased from 1.4 to 2.8. Further evidence of this conclusion is that the patient gained in weight although there was but 300 calories in excess of basal requirements.

It is our experience that when a patient gains in tolerance he usually holds that tolerance if

Case No.	Period	Basal Calories	Calories Fed	Calories above basal	Weight
7	I	1510	1660	100	133
	II		1800	300	132
	III		1970	400	131
	IV		2050	500	129
	V		2210	700	123
For 17 days the calories fed amounted to 500 above the basal level.					
8	I	1420	1340	—100	87
	II		1565	100	86
	III		1685	250	
	IV		1790	350	90
For 16 days the calories fed amounted to 300 above the basal level.					

he remains free of infectious complications, at least while he is in the hospital.

To us, the most interesting possible cause of these higher ratios is the failure of digestion and absorption of carbohydrate. These possibilities can be illustrated by a study of ratios obtained in case 6. We believe that gain in this patient's tolerance does not account for the higher ratios when more carbohydrate was fed. First, because the apparent gain in tolerance was followed by a sudden loss in tolerance—a sequence not usual unless in the presence of infection. and secondly, because of failure to gain in weight.

Case No.	Period	Basal Calories	Calories Fed	Calories above basal	Weight
6	I	1340	1580	200	104
	II		1580	200	106
	III		1750	400	106
	IV		1990	600	109
	V		2300	950	107
	VI		2450	1100	
	VII		2300	950	108
	VIII		1975	600	108

For 29 days the calories amounted to at least 600 above the basal level.

From the beginning of period IV to the end of period VIII the boy received from 600 to 1100 calories in excess of his basal rate. During these twenty-nine days he only gained from two to four pounds. Comparing this case with case 8, the impression is gained that in the former case the high ratios were due to non-absorption and in the latter, to an increase in tolerance. To further discuss case 6: The high ratios rose to a high level in periods III and IV; began to fall in period V; became zero in the protein shift period, and in periods VII and VIII became stationary at a low level. Let us assume that in these last two periods the patient was absorbing all of the carbohydrate fed. Let us assume that each unit of insulin was good for 1.4 grams of carbohydrate; then in period VII, 20 units x 1.4 equals 28. grams of sugar from insulin. Since 51 grams of carbohydrate were tolerated, the patient's own tolerance amounted to 51 minus 28 or 23 grams of carbohydrate.

In period VIII, 30 x 1.4 equals 42 and 60 minus 42 equals 18 grams tolerance. The average of these periods would be a tolerance of 20 grams. Assuming that the patient's own tolerance was 20 grams instead of 33 then in period I, 13 grams of carbohydrate was unabsorbed daily. In period II, 10 units x 1.4 equals 14.50 grams (tolerated C-H) minus 14 equals 36 and 36 minus 20 (patient's tolerance) equals 16 grams carbohydrate unabsorbed or 50% of carbohydrate fed.

By the same calculations in period III, 26 gm. of carbohydrate were unabsorbed, or 50% of fed carbohydrate. In period IV, 33 grams of carbohydrate were unabsorbed or 50 per cent. of fed carbohydrate. In period V 22%. By comparisons of the calories fed and the weight increase with the ratios obtained cases 6 and 9 illustrate non-absorption; case 8 gain in tolerance. Case 10 shows excellent absorption but owing to an attack of pyelonephritis only gained 4 pounds in thirty days. The latter case illustrates another important factor in this kind of work; namely, subacute infections.

CASE 6

M-10362 (Bal.), Admitted Jan. 15, 1923

Period	Date	Urine Sugar Gms.	Urine Nitrogen Gms.	Total Acetone Gms.	Insulin Units	Diet: Protein Gms.	Diet: Fat Gms.	Diet: Carbohydrate Gms.
I	Jan. 17	26	9.90		0	50	140	31
	" 18	24	9.98		0			
	" 19	29	9.88		0			
	" 20	33	9.89		0			
	" 21	36	9.89		0			
	Average	29.6	9.89 × 3.3 equals 32.6					
	Ferric chloride 1 plus							
	Weight 104 lbs.							
II	Jan. 24	7	6.93		10	50	140	31
	" 25	5	6.93		10			
	" 26	5	6.93		10			
	" 27	0	6.47		10			
	" 28	3	6.47		10			
	" 29	3	8.50		10			
	Average 4		7.03 × 3.3 equals 23					
	Ferric chloride 0							
	Weight 106 lbs.							

Period	Date	Urine Sugar Gms.	Urine Nitrogen Gms.	Total Acetone Gms.	Insulin Units	Diet: Protein Gms.	Diet: Fat Gms.	Diet: Carbohydrate Gms.
III	Feb. 1	9	5.77	0.61	8.5	50	150	50
	" 2	11	5.77	0.61	8.5			
	" 3	12	5.30	1.64	8.5			
	" 4	5	5.30		8.5			
	" 5	11	5.72	0.85	8.5			
	" 6	8	5.72	0.85	8.5			
	" 7	12	6.16	1.03	8.5			
	" 8	21	6.16	1.03	8.5			
	Average 11		5.74 × 3.3 equals 19					
	Ferric chloride 0							
	Weight 106 lbs.							
IV	Feb. 10	16	6.45	0.92	17	50	170	65
	" 11	7	6.45	0.92	17			
	" 12	Trace	4.60	0.66	17			
	" 13	0	4.60	0.66	20			
	" 14	0	5.44	0.97	20			
	Average 5		5.51 × 3.3 equals 18					
	Ferric chloride 0							
	Weight 109 lbs.							

Period	Date	Urine Sugar Gms.	Urine Nitrogen Gms.	Total Acetone Gms.	Insulin Units	Diet: Protein Gms.	Diet: Fat Gms.	Diet: Carbohydrate Gms.
V	Feb. 15	29	lost	4.09	20	50	200	75
	" 16	33	lost	4.09	20			
	" 17	30	5.58	2.80	17			
	" 18	22	5.58	2.80	17			
	" 19	25	5.56	8.24	20			
	" 20	38	5.56	8.24	20			
	Average	29	5.57 × 3.3 equals 18					
		Ferric chloride 3 plus						
		Weight 107½ lbs.						
VI	Feb. 22	53	12.52	5.98	20	125	200	38
	" 23	54	12.52	5.98	20			
	" 24	57	15.42	6.84	20			
	" 25	57	15.42	6.84	20			
	" 26	59	15.30		20			
	" 27	58	lost		20			
	Average	56	14.23 × 3.3 equals 47					

Note:—No cause for decrease in tolerance between Feb. 15 and Feb. 25; no fever, no complaints. W. B. C. 6,000.

Feb. 25 had fever of 100 for one day.

During stay in hospital temperature varied from 96.8 to 98.6 almost every day.

Period	Date	Urine Sugar Gms.	Urine Nitrogen Gms.	Total Acetone Gms.	Insulin Units	Diet: Protein Gms.	Diet: Fat Gms.	Diet: Carbohydrate Gms.
VII	Feb. 28	26	9.85		20	50	200	76
	Mar. 1	48	6.65		20			
	" 2	45	6.65		20			
	" 3	63	7.42		20			
	" 4	69	7.42		20			
	Average	50	7.60 × 3.3 equals 25.1					
		Ferric chloride 2 plus						
		Weight 108 lbs.						
VIII	Mar. 5	28	7.55		30	50	175	50
	" 6	22	7.55		30			
	" 7	17	6.55		30			
	" 8	8	6.55		30			
	" 9	0						
	Average	0*	7.05 × 3.3 equals 23					
		Ferric chloride plus/minus.						
		Weight 108 lbs.						

*Thereafter was sugar free.

F. N. Allen[13] in a recent paper concludes that, in the presence of larger amounts of available carbohydrate, insulin is more efficient than with smaller amounts. Also that the smaller doses of insulin are more efficient than the larger ones. His work was with depancreatized dogs and may be interpreted as showing that with smaller doses of insulin, less of the fed sucrose was absorbed than with larger doses. A depancreatinized animal can hardly be expected to completely absorb food stuffs, even sugar. Allen's animals did not absorb 50 per cent. of the nitrogen fed. His findings might be interpreted as experimental evidence analogous to our findings. However we feel that absorption of food in the human diabetic or depancreatinized animal is very apt to be incomplete. Ringer[14] in completely controlled experiments on phloridinized dogs did not find a variation in glucose value of insulin with varying doses of insulin. His ratios ranged closely .6 to .9 grams of glucose per unit of insulin. At present the evidence seems to show that ratios which are higher during periods of high carbohydrate feeding than those obtained by the Woodyatt method may be due to poor absorption of carbohydrate or to a change in the patient's endogenous insulin output.

Case No.	Period	Basal Calories	Calories Fed	Calories above basal	Weight
9	I	1090	1220	100	105
	II		1460	350	103
	III		1340	250	101
	For 25 days calories fed amounted to 300 above basal level.				
10	I	1250	1400	150	96
	II		1850	600	97
	III		2000	750	96
	V		2060	800	100
	VI		2120	850	100
	For 30 days calories fed amounted to 500 above the basal level.				

PROTEIN SHIFT

In cases 6 and 10 ratios were obtained during periods where the sugar of protein origin amounted to more than 50% of the total fed carbohydrate. The ratios compared to those obtained in periods preceding or following were usually somewhat lower? Table 4 is a summary of these periods.

It should be borne in mind that since the carbohydrate from protein is calculated from the urine nitrogen, it represents sugar actually utilized. The higher the percentage of sugar from protein, the more accurate will be the ratios. This fact accounts for the slightly lower ratios obtained in the protein shift periods in cases 7, 8, 9, 10 and 13. The average ratios in cases 7, 8, 9, and 10 is 1.4, which is the same as ratio obtained by Woodyatt's method. In cases 6 and 2 the patient's tolerance was definitely greatly lowered when the higher protein diets were taken. The same is true in case 11. Here a mild diabetic without insulin lost tolerance from 84 to 55 grams. The other two mild diabetics, cases 12 and 13, apparently did not suffer through high protein feeding. The three cases

TABLE 2

Clinical Data of Cases on Which Carbohydrate to Insulin Ratios Are Calculated

Case No.	Sex.	Age at onset. Yrs.	Duration of Diabetes. Yrs.	Height. Inches.	Weight at onset, plus or minus normal for height. Lbs.	Weight at beginning of observation. Lbs.	Urine ferric chloride blood CO_2 vol. % on adm.	Basal calories Calculated (c), Determined (d)	Complications and Remarks.
1 L. S.	F	25	2	62	130 (plus 10)	86	4 plus	1180 (c) 1100 (d)	Possible pulmonary TBC. X-ray plate suggestive.
2 Mil.	M	25	3½	60	156 (plus 6)	120	None	1420 (c) 1460 (d)	Possible pulmonary tuberculosis. Had pleurisy at later date.
3 Rit.	M	30	1½	70	165 (plus 7)	121	3 plus	1580 (c) 1620 (d)	Carious teeth.
4 Tri.	M	38	2½	69	140 (minus 27)	111	3 plus	1500 (c) 1450 (d)	None.
5 Rai.	F	16	1½	63	120 (plus 0)	100	None	1340 (c) 1090 (d)	None.
6 Bal.	M	22	3½	66	125 (minus 9)	103	1 plus	1440 (c) 1340 (d)	
7 Ferr.	M	34	1½		165 (plus) (minus 0)	120	2 plus	1600 (c) 1510 (d)	Infected tonsils. Stone, right kidney (no colic). Slight hematuria.
8 Schul.	M	16	2	61	107 (minus 6)	90	4 plus 25	1460 (c) 1420 (d)	Infected tonsils. Chronic tonsillitis.
9 Snod.	M	24	2	68	125 (minus 20)	100	4 plus 52	1270 (c) 1090 (d)	Carious teeth.
10 McB.	F	16	2½		125 (plus 7)	95	3 plus	1360 (c) 1250 (d)	Pyelonephritis, mild attack.
11 Par.	M	21	1½	66	150 (plus 11)	133	0	1580 (c) (d)	
12 Mart.	M	65	1	66	150 (plus 0) (minus 0)	135	0	1420 (c) (d)	Arteriosclerosis. Bronchitis, chronic. Rhinitis, atrophic.
13 Rosen.	F	43	1	61	130 (plus 0) (minus 0)	97	plus minus	1160 (c) (d)	Menopause. Arteriosclerosis.

whose tolerance fell during protein feeding behaved very similarly to the case so thoroughly studied by Wilder, Boothby and Beeler[15]. These few cases would demonstrate that the sugar from protein is burned through the agency of insulin in the same proportions as that from starch. Some diabetics tolerate protein very badly and lose tolerance rapidly when fed much protein. However, it is impossible to say positively whether administered insulin is less efficient or whether the patient's own production fails.

CONCLUSIONS

1. It is possible to demonstrate under the conditions outlined a quantitative relationship between insulin administered and carbohydrate tolerated. One unit of "H" insulin being equivalent to 1.4 of carbohydrate.
2. In the majority of diabetics sugar derived

from protein shows the same quantitative relationship to insulin as that derived from starch. Of the nine diabetics on whom feeding excess of protein was studied, three showed very disastrous effects.

TABLE 4

Periods During Which More Than Fifty Per Cent. of Carbohydrate Was of Protein Origin

Carbohydrate Tolerated	Per cent. of Carbohydrate of Protein Origin	Ratio	Case No.	Period No.
Gms.	Per cent.			
41	47	0.6	2	III
58	23	1.45	2	IV
64	19	1.6	6	V
29	55	0.8	6	VI
51	25	1.9	6	VII
92	23	2.35	7	IV
82	58	1.85	7	V
66	21	1.40	8	II
65	57	1.30	8	III
80	27	2.80	8	IV
66	58	1.6	9	II
83	28	2.3	9	III
69	21	1.7	10	II
55	54	1.0	10	III
77	21	1.1	10	V
86	23		11	III
55	52		11	IV
91	24	1.8	11	V
49	31		12	I
48	63			II
75	33	1.66		III
74	23		13	I
64	58		13	II
84 plus	29	1.0 plus	13	III

TABLE 5

All Periods Grouped According to the Amount of Tolerated Carbohydrate

C-H Tolerated	Ratio	% of Total C-H of Protein Origin	Patient's Tolerance	Units of Insulin Daily	Urine Sugar	Case No.	Period No.
Gms.		%	Gms.	Units	Gms.		
29	0.8	55	13	20	56	6	VI
41	0.6	47	29	22	8	2	III
42	1.4	49	25	12	17	3	II
50	1.7	43	33	10	4	6	II
51	1.9	25	13	20	50	6	VII
55	1.0	54	34	20	28	10	III
57	0.9	35	39	20	8	5	III
57	1.0	38	39	17	7	5	II
58	1.45	23	29	20	8	2	IV
58	2.9	28	33	8.5	11	6	III
59	1.5	38	45	9	5	7	II
60	1.6	32	13	30	12	6	VIII
64	1.6 ?	19	33 ?	19	29	6	V
65	1.3	57	52	10	5	8	III
65	1.8	29	29	20	4	2	II
66	1.4	21	52	10	10	8	II
66	1.6	58	21	27	42	9	II
69	1.7	21	34	20	26	10	II
73	1.4	28	30	30	33	1	III
73	1.7	33	39	20	23	4	II
75	1.7	33	48	15	0	12	III
77	1.1	21	34	40	5	10	V
78	1.6	24	30	30	41	1	II
78	2.5	22	33	18	5	6	IV
80	2.8	27	52	10	1	8	IV
80	1.8	31	45	19	7	7	III
82	1.85	58	45	20	13	7	V
83	2.3	28	21	27	0	9	III
91	1.8	24	55	20	7	11	V
92	2.35	23	45	20	12	7	IV
103	1.7	17	34	40	0	10	VI

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NEW YORK VACCINATION BILL BECOMES LAW

TAKES EFFECT IMMEDIATELY

THE measure amending the Public Health Law with reference to records and reports of vaccination, introduced in the senate by Dr. Love and in the assembly by Dr. Lattin, has passed both houses and has been signed by Governor Smith, becoming chapter 25 of the laws of 1924.

This act, which takes effect immediately, requires every physician performing a vaccination to file a report within ten days with the local health officer, instead of with the State Commissioner of Health as heretofore, using a form furnished by the State Commissioner of Health. The report must include a statement as to whether, upon re-examination after a proper interval, the vaccination was found to be successful or not successful and, wherever possible, the date of previous successful vaccination.

Local health officers are required to retain in their file the reports received from physicians and to report each month to the State Department of Health the number of vaccinations reported during the preceding month, indicating how many were successful and how many were unsuccessful.—*New York State Health News.*

Endocrine Dysfunction as a Possible Etiologic Factor in Progressive Deafness

[From The Evan's Memorial]

BY DANA W. DRURY, M. D., BOSTON, MASS.

WHILE Otosclerosis has been recognized for many years as a clinical entity, the etiology of the condition must still be regarded as obscure. Numerous theories exist, as is always the case with inaccessible diseases, but they all lack the authority of experimental substantiation.

The earliest[1] [2] theory advanced held that the condition was always secondary to middle ear infection (dry catarrh). Katz[3] in 1890 was the first to publish the microscopic findings in cases of stapes fixation where diagnosis had been established. Later the view obtained, that otosclerosis was a primary condition,[4] [5] either a bone disease or an abnormal development of the cartilaginous remnants in the labyrinth capsule. For a time Gray[6] connected the lesion with failure of the local blood supply. He also recorded the absence of any evidence of inflammatory processes and that the character of initial change was an absorption of osseous and cartilaginous structures throughout small circumscribed areas of bone. He further stated that new spongy bone replaces the structures which have been absorbed. Kerrison observed these foci in widely separated portions of the petrous bone, not closely related to structures that are essential to cochlea function.

More recently Mayer, Cornet and Gray have withdrawn their earlier theories involving local anaemia. Mayer considers it as an undescribed variety of otitis fibrosa, while Gray feels that it is a biological variation, a degeneration of the later evolved auditory, as distinct from the equilibrative mechanism of the ear. Hammerschlag traced an hereditary influence in the condition, while Korner could find no such evidence in spite of the fact that polydactylism and multiple exostoses existed in cases of apparent otosclerosis. Haberman held that syphilis was a direct cause and this opinion has received definite support, although Denker of Halle examined 27 cases during life which disclosed no syphilitic lesions at necropsy. Kerrison regards it as a factor in the progress rather than a causitive condition.

At birth the bony labyrinth is approximately at its maximum size. All other bones of the body differ, in that they increase from birth to maturity. This would explain the fact that there is general arrested development, both central and peripheral. By many observers, otosclerosis is conceived to be associated with bony fixation of the stapes. This concept is possibly due to faulty diagnosis, as intralabyrinthine structures may be involved where fixation of the stapes does not exist. The disease begins above the oval window in the bony capsule surrounding the labyrinth. This may in turn give rise to ossification of the annular ligament, following absorption and replacement by bone. Bruhl thinks that the predilection for the region in front of the oval window is due to bony stresses set up by the pull of the tensor tympani muscle. Gray follows this a step further by stating that besides the bony stresses at the oval window, he believes that vibrations sensitize this area to new formations or to pathological changes.

Siebemmann[7] believed it a developmental abnormality rather than a disease in the ordinary sense. He regarded it as a last stage in the process of development of the labyrinthine capsule, a stage which ordinarily does not take place. He considers it not as originating in the bony capsule, but in the layer of cartilage cells lying between the original membranous capsule of foetal life and the surrounding bony capsule which is later developed from the connective tissue of the skull.

Recently Ferrari[8] has pointed out that apparently certain definite similarities exist between osteomalacia, rickets and otosclerosis. Kobrak[9] regards a disurbed calcium metabolism as causative, while Cornet[10] suggests a chloride retention. Alexander observed the condition in cretins (both man and other mammals). Korner shows that it commences earlier than the twentieth year. Kerrison believes that sex apparently determines a predisposition. In Denker's series, the percentages were 58.2 and 41.8 for women and men respectively.

Several observers have investigated the glands of internal secretion as possible causative factors, approaching the subject from several different angles as experimental medication, observation of the clinical picture and correlation of single symptoms. In regard to the first it is difficult to judge the effect of medication as conclusions can be realized ordinarily only after years of observation. Further, a large number of patients without treatment either remain stationary or at the most progress slowly. Single symptoms are like single tests, end results from a wide variety of causes. Also, clinical pictures frequently lack that clarity of outline, essential to any exact study.

The endocrine glands, however, offer a field of study of definite possibility. In the first place, certain of them are believed to have some influence over the calcium metabolism which may be causative or resultant. Further, they are recognized as very definitely concerned in general metabolism as regulators if not centers of control. In otosclerosis, there exists the possibility that the absorption of any portion of the margin of the oval window might interfere

with the nutrient supply of that part of the annular ligament of the stapes, contiguous to it. This might engender an absorption of the ligament itself with a gradual replacement by porous bony elements which in turn could become more compact in structure. Granted that this is speculative, an endocrine influence might well initiate, supplement or modify such changes.

As early as 1902[11] glandular dysfunction as an etiologic factor is mentioned, the thyroid seeming to have the preference. The reason for this selection was probably that the observers dealt principally with trophic and toxic disturbances. Axhausen, while believing that changes in the internal glandular secretions, especially the thyroid, determined the dystrophic processes of bone, found in many cases, that the changes in other parts of the body were more marked than in the ears.

The present report embodies the results of a clinical and laboratory study covering a period of 18 months, designed to ascertain if there be any endocrine influence demonstrable in otosclerosis. Certain criteria for the selection of cases was established as indicating the existence of the symdrome. They are as follows:—

1. Loss of hearing by air conduction for a considerable part of the lower end of the tone series.
2. Prolongation of bone conduction above the normal duration.
3. Negative Rinné test.
4. Tinnitus, Vertigo, Paracussis Willisii, one or more of these three.
5. Practically normal drum membranes: patent eustachian tubes (catheter inflation exerting no influence on the hearing): reddish "blush" seen through the drum membrane behind the umbo.

While no case showed all of the points noted above, each one demonstrated a sufficient number of these symptoms to leave no doubt as to the diagnosis.

The method adopted evaluating the endocrine condition was the combination of subjective clinical and objective laboratory findings recently described by Rowe[12]. The laboratory investigation has been carried out under the direction of Dr. Allan Winter Rowe. Any material advantage obtained from this study is entirely due to his keen interpretation and ever-ready coöperation.

Briefly summarized it may be said that a large number of vital function tests from various sources were studied originally with normal human subjects, and their dependability and significance evaluated. These studies established a basis for the performance of those tests found to be significant and reliable. A group of cases in whom existed demonstrable endocrine defect, limited to a single focus, were next subjected to the same methods of study. In this way both the sense and amount of deviation from the base line caused by aberrant function could be determined. Finally, individuals of unrecognized etiology were selected, a diagnosis established by the conformity of their tests to one or another of the conditions previously studied, the indicated specific glandular medication administered, and ultimately the effect of this latter determined by a repetition of both clinical and laboratory studies. The coincidence thus obtained offers ample support for the validity of the general concept and the procedure based upon it. Among the more significant points noted in this study the following give information:

1. *Basal Metabolism.* Where such extraneous factors as fever, starvation, the leukemias, acidosis, etc., can be eliminated, the ductless glands in largest measure determine the level of the basal metabolic rate. Thyroid influence is predominant. That of the gonad, the pituitary, and possibly the adrenals is tendential rather than established. The sense of change is uniform. The differences are those of degree.

2. *Vital Capacity.* With lowered functional activities the vital capacity shows definite circumscription following in large measure the indications of the basal metabolic rate. Here again other extraneous factors must be carefully excluded. For example, Peabody has shown the influence of cardiac lesions.

3. *Alveolar Carbon Dioxide.* This factor is influenced by certain endocrine conditions. Most suggestive is the fact established by many observations, that in ovarian failure and in pregnancy there exists a level of alveolar carbon dioxide indicative of severe acidosis without any clinical evidence of the same.

4. *Blood Chemistry.* Highly informative concerning kidney permeability and general metabolic level. Uric acid shows high values in certain types of pituitary conditions, without complementary change of the other constituents. Further, many thyroid cases, particularly those of the myxedematous type, give a blood chemistry picture highly suggestive of an incipient nephritis which normalizes under medication.

5. *Blood Morphology.* Here again a number of points in the standard and differential count have assumed diagnostic significance. Many endocrine bloods are lymphoid in character. With many pituitary cases a low-grade eosinophilia is observed.

6. *Urine Analysis.* Careful routine examinations of the urine gave much general information and the relative amounts of the several nitrogenous constituents, particularly the residual fraction, have definite diagnostic significance.

7. *Sugar Tolerance.* While the shorter form of examination does not permit the inclusion of this test, in many cases of this series it was added as a supplement. The sugar selected is galactose, and the metabolism of this sugar is affected by the functional level of the thyroid,

TABLE 1

No.	Diag.	Ophthalmological Exam.	X-ray	Neuro-Otological	Otological					Remarks
					Rinné	Hered. Deaf.	Vertigo	Tinnitus	Paracussis Willisii	
S— 39	Normal	—	Negative	Normal	0	—	—	+	—	
48	"	—	—	"	0	+	—	+	—	[sinusitis
52	"	—	—	Sluggish static labyrinth	0	—	—	+	+	Caries of teeth;
61	"	Snuff fundi; enlarged blind spots	Negative	Very slow static labyrinths	0	—	+	+	+	? of syphilis
65	"	—	"	Normal	0	—	—	+	+	
66	"	Normal	"	"	0	—	+	—	—	
71	"	—	—	—	0	—	+	+	—	
94	"	Normal	—	Dead static labyrinths	0	—	—	—	+	
110	"	"	Negative	Normal	0	—	—	+	+	
116	"	"	"	Slow normal	0	+	+	+	+	
119	"	—	—	Normal	0	+	+	—	—	
123	"	Normal	Negative	"	0	—	—	+	+	Typhoid fever
126	"	Normal	"	"	0	—	—	+	+	
129	"	—	"	"	0	—	—	+	+	
130	"	—	—	—	0	—	+	+	+	
163	"	Normal	Negative	Normal	0	+	—	—	+	Influenza
S— 58	Syphilis	—	—	Dead static labyrinths	0	—	—	+	—	Acquired
S—144	"	—	—	Normal	0	—	—	+	+	Congenital
S— 17	Pituitary —	Enlarged blind spots	Post. clinoid enlarged	—	0	—	—	+	+	
67	" ±	Yellow discs; enlarged blind spots	Negative	Normal	0	—	—	+	+	
B— 92	" ±	Enlarged blind spots	"	"	0	—	—	—	+	[pregnancy Deafness following
S—106	" ±	Enlarged blind spots; arcus senilus	Chronic sinusitis	"	0	—	—	+	+	
172	" ±	Tallow yellow discs	Bony-ridge sella	"	0	—	—	+	+	
190	" —	—	" " "	"	0	—	—	+	+	
207	" —	Slightly yellow discs	Normal	"	0	—	—	+	+	
209	" ±	—	—	—	0	—	—	—	+	
256	" —	Yellow discs; enlarged blind spots	—	Normal	0	—	—	+	+	
B—111	Gonad —	Discs slightly yellow and funnel shaped	Negative	Static labyrinth dead	0	—	+	+	+	
132	"	Disc margins indistinct	"	Static labyrinth dead	0	—	—	+	+	
S—175	"	Negative	"	Normal	0	—	—	+	+	
183	"	Normal	"	"	0	—	—	+	—	
186	"	Enlarged blind spots	"	"	0	—	—	+	—	
270	"	Slightly yellow discs	"	"	0	—	—	+	+	
S— 68	Thyroid ±	Normal	—	Slow normal	0	—	+	—	+	
B—110	" —	Discs hazy; fields contracted	Left side heart enlarged	Normal	0	—	+	—	+	
S—143	" —	Negative	Negative	"	0	—	+	+	+	
S— 60	Endocrine	—	—	Normal	0	+	—	+	—	
B— 66	"	Enlarged blind spots	—	"	0	—	—	+	—	
S— 70	"	Negative	—	"	0	+	+	+	—	
B— 98	"	Contracted fields	—	Hyperactive static labyrinths	0	—	+	—	+	
B—141	"	—	Negative	Normal	0	—	—	+	+	
S—263	"	Negative	—	"	0	—	—	+	+	
266	"	Enlarged blind spots; contracted fields	Sinusitis ? lungs	"	0	—	—	+	+	Accident; sinusitis
273	"	—	—	"	0	+	+	+	+	

pituitary and ovaries in such wise as to constitute an important differential test.

8. *Miscellaneous Observations.* Special eye, ear, neuro-otological, X-ray and physical examinations all contribute factors of importance in this series. Numerous other similar procedures are added wherever indicated.

In the interpretation of the findings of such an analysis, two points must be emphasized. First, that all non-endocrine influences must be sedulously excluded by additional dependable observations, and second, that no one test alone can be regarded as containing an independent diagnostic entity. Only the conjoint findings of the entire series of tests with their mutual inter-relationships warrant the establishment of a diagnosis, and this is always to be regarded as tentative until verified by medication and subsequent repetition of clinical and laboratory observations. The complete laboratory findings upon which diagnoses were based are far too voluminous to permit of transcription of the data even in tabular form. Certain of the special tests however and the more significant of the ear findings may be noted in Table 1. A summation of the foregoing, together with the more significant results of this preliminary study are collected in Table 2.

TABLE 2

44 cases make the series for this study. The division is:

Non-Endocrine		
Normal	16	36.3%
Syphilitic	2	4.5%
Total	18	41%
Endocrine		
Pituitary	9	20.6%
Gonad	6	13.6%
Thyroid	3	6.8%
*Unclassified	8	18.2%
Total	26	59%
Males	11	25%
Females	33	75%

	Oldest	Youngest	Average
Male	53	10	32.3
Female	55	13	31.3

Rinné negative	44	100%
Raised lower limits	44	100%
Tinnitus	36	82%
Vertigo	13	30%
Paracussis Willisii	33	75%
Active semicircular canals	32	73%
Dead static labyrinths	4	9%
Hyper-active static labyrinths	1	2%
Sluggish static labyrinths	4	9%
Bridging sella	4	9%
Tallow colored discs	6	14%
Enlarged blind spots	8	18%

With these cases showing endocrine aberration, the specific glandular medication implied by the diagnosis was exhibited. The results are definitely encouraging and the full details will be given in the near future in a second paper. Space permits the present discussion of a single typical case in detail.

B-111. Female, married, age 28 years.

F. H. Father and mother living and well. One sister living, one brother died in infancy. Grandmother was deaf and died from diabetes.

P. I. Married two years. No children, no miscarriages. Deaf for 15 years, very rapidly worse for the past 5 years, especially in the right ear. Constant tinnitus both ears. Vertigo when focusing on objects, but not excessive.

Catamenia established at 12 years. Usually regular. Duration 4 days. No pelvic pain.

Appetite good. Had nausea in the morning for years. Occasionally vomiting with irritation and hiccoughs. Bowels regular, rarely uses medicine. Sleep fair. No palpitation of heart. No urinary symptoms. Gained 15 pounds within the past year.

P. E. A well-nourished and developed female. Marked growth of hair on face. Height 158 cm., weight 70.8 kg., vital capacity 20% by Dreyer's standard. Patient is very intelligent, no evidence of mental sluggishness. Skin thick, good color, overgrowth of hair on extremities. Teeth well kept. Throat negative. Nose has slight deflected septum to left. Eyes react to light and distance. No strabismus or nystagmus. Ears show apparently normal position of the drum membranes with both eustachian tubes patent. Slight reddish "blush" seen through the drum membranes on the labyrinthine wall. The functional tests showed the Weber equal to both ears. Normal high limits. On the left side 128dv., while no tuning fork was heard by the right ear by air conduction. The Rinné test showed in the right ear 0/4 for the 512dv. fork. In the left ear the same fork showed 3/8 for a Rinné. The thyroid was not enlarged and the heart, lungs and abdomen showed nothing abnormal.

Haemoglobin 95%. Red cells 5,750,000, white cells 7,450, color index 1. Lymphocytes 40% with an eosinophilia of 2%. The blood pressure was 122mm. systolic, 68mm. diastolic.

Chemical examination of the blood gave the following results: Non-protein nitrogen, 41 mgm.: urea nitrogen, 20mgm.: uric acid 5.1mgm.: creatinin, 1.8mgm.: blood sugar, 100mgm.: Wassermann reaction negative.

The urine examination was as follows: Amount (24 hours), 850c.c.: sp. gr., 1.024: no albumin or sugar: sediment not remarkable, except many uric acid crystals. Total nitrogen, 9.96gms.: urea nitrogen, 88.6%: uric acid nitrogen, 1.5%: ammonia, 5.2%: creatinin, 4.0%: undetermined nitrogen 0.9%. Phenolsulphonephthalein output in two hours, 70%.

*In these cases, the data secured from the short form study was too incomplete to determine the exact focus of failure. In establishing the endocrine diagnosis, certain of the glands could be ruled out. Experimental medication was suggested on the basis of probability of involvement, in default of the more complete information given by the long form study.

The basal metabolic rate—7%, temperature 98.1 F., pulse, 82, sugar tolerance (galactose) test showed glycosuria with 20 grams, none with 10 grams. The alveolar CO_2 was 50mm.

In 1922 (over a year before I first saw her), the pituitary and adrenals were X-rayed which was followed by severe vomiting and epigastric distress. During 6 months of this period she received pituitary extract, with no improvement. Following the long form examination she received ovarian extract and in three months' time the functional tests of both ears showed a normal Galton: Weber lateralized to the left ear; 96dv. low limit in left ear, while the low limit for the right ear was 2048dv.: the Rinné test remained the same in the right ear while the left changed to 6/10. The headaches and tinnitus have improved so much that the patient is very happy.

While there may be little justification for creating separate entities in progressive systemic deafness, there is, nevertheless, in over 50% of these cases distinct endocrine glandular dysfunction.

Patients visit an aurist complaining of deafness and head noises, one or both. There seems to be no constant relationship between these two symptoms. The tinnitus may be almost unbearable with little change in the range of hearing in either ear. Rarely, the deafness may be marked and hardly any tinnitus complained of. On examining the ears, one may find again various signs, inconstant perhaps, except for a lessening of cerumen in the external canal. As the case may be complicated with middle ear changes the drum membrane may be thickened and retracted. It may be quite normal in appearance and the patient still complain of extreme deafness. Also, the patency of the eustachian tube varies, as on catheterization, it may seem to be open and the drum yet show retraction. In the hypo-thyroid cases the eustachian tube seems much swollen as is the membrane in the naso-pharynx. The functional tests for hearing, therefore, are the most important aids for a correct diagnosis.

In this series, with the endocrine cases, failing memory was frequently noticed. The patients seemed dull and concentration was an effort. The disposition in several was quite irritable, and there was a definite restlessness. They were nervous and introspective. Occasionally I noted in testing the ears that the response was slow and indefinite. Considerable effort seemed to be necessary to produce an answer.

Several of these cases stated that their deafness was more pronounced after a severe illness, such as typhoid and influenza. This is probably a toxaemia, but it is also noted that the crises of life, as well as worry and shock take their toll as causative factors.

Frequently these patients were in doubt as to the time of onset of the deafness, but, without exception, they identified the beginning of the tinnitus. In none of these cases was any connection found between inflammatory middle ear conditions and otosclerosis.

It seems to be a fact that it is the nervous element of hearing that shows the most profound results of the infiltration and subsequent degeneration. The path seems to be from the end-organ in the cochlea, through the cochlea branch of the eighth nerve into the perception and interpretation area of the brain.

While there is a tendency to attribute otosclerosis to one cause, it seems probable from this study, that the ductless glands are an important factor among several in the possible cause of the disease. A large percentage of otoscleroties remain in apparent good health which may not seem to be compatible with an excess or deficiency of the internal secretions. Certainly, however, the present series of cases indicate that a certain number of these patients have an endocrine background.

Further, in correcting the endocrine aberration, marked improvement is observed in the specific ear condition. The relationship is far from clear, but that one exists admits of no doubt.

Conclusions

In this series:

1—The aberrant endocrine function indicates a lowered, rather than an increased activity.

2—Several individual foci are implicated, pituitary, thyroid and ovary. No so called pluriglandular cases were observed.

3—No specific adrenal influence has been recognized, nor does the testicle seem to be a factor.

4—In no case was any concomitant bone disease observed.

5—Otosclerosis would seem to be the result of several divergent and apparently unrelated causes.

6—The definite percentage of non-endocrine cases forbids the use of promiscuous glandular medication.

In conclusion, the author wishes to express his appreciative thanks to Dr. Leon E. White and to the Mass. Charitable Eye and Ear Infirmary, for a number of the cases entering into this report. To the laboratory staff of the Evan's Memorial for their assistance, I offer my thanks.

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Fracture of Ribs by Muscular Action, with Report of a Case

BY SIMON B. KLEINER, M. D.

Clinical Instructor in Orthopedic Surgery, Yale University School of Medicine
New Haven, Conn.

Among the large number of cases of fractured ribs, it seems remarkable that such a small number of these cases is caused by muscle pull. The ribs are more frequently fractured than any other bones in the body. Stimson's statistics, (1. Stimson, L. A., A practical treatise on fractures and dislocations, New York, Lea and Febiger, 1917, p. 19) taken from the statistics of the Hudson Street Hospital, New York, show that in a series of 14,566 fractures, fracture of the ribs occurred in 1675 cases, or 11.49%.

Nevertheless, in surgical literature, the etiology of fracture of the ribs is usually described as the result of direct trauma on the exposed ribs; muscle pull as a factor is very often absolutely ignored. Rose and Carless (2. Rose, W., and Carless, A., Manual of Surgery, New York, Wm. Wood & Co., 1912, p. 490) have apparently overlooked this cause entirely in describing the etiology of fracture of the ribs. Scudder (3. Scudder, C. L., Treatment of Fractures, Philadelphia, W. B. Saunders & Co., 1922, p. 122) says "Direct violence is the common cause of fracture." Stimson (1. P. 48) refers to this type of fracture and says "Fractures of one or more ribs are not infrequently caused by violent coughing, especially in the consumptive." He also cites Hilton's case of a rib fractured by muscular contraction while patient was mounting a spirited horse (4. Hilton, Lancet, Lond., 1852. I, p. 143).

Attention to this oversight in textbooks on the chest and tuberculosis is also pointed out by Webb and Gilbert (5. Webb, G. B., and Gilbert, G. B., Ribs fractured by cough, Journ. A. M. A., lxxxi, p. 25, Jul. 7, 1923) who report three cases of fracture of the ribs caused by coughing spells in tuberculous patients.

After a thorough search of the literature, the author has been able to find only fifty-six cases of ribs fractured by muscular action. Of these, fourteen are included in Gurlt's comprehensive work on fractures, published in 1860 (6. Gurlt, Knochenbrüche, Breslau, 1860, v. ii, p. 191). Joseph Seilin (7. Seilin, J., Fracture of the 11th rib by muscular action; resume of reported cases, Medical Record, xci, p. 281, Feb. 17, 1917) sums up the reported cases as numbering 52. Since that time, four cases have been reported. M. de Coquet (8. M. de Coquet, Societe de Medicine et de Chirurgie de Bordeaux, meeting of Jan. 21, 1921, J. de Med. de Bordeaux, li, 1921, p. 78) describes a fracture of the eighth rib (side not reported) caused by a severe coughing spell in a patient free from disease: while the other three cases are those of Webb and Gilbert (5.) cited above. Two of these were on the left side, the ribs fractured being the fourth and fifth in one patient, the ninth in another; the third case was a fracture of the sixth rib right.

The following case will prove of interest because of the unusual etiology:—

J. G., a laborer, married and in good health, was referred to me Nov. 4, 1921, with the following history: On Oct. 31, 1921, while at work unloading large flagstones with a fellow laborer, the assisting man's grip loosened and the patient was forced to sustain all of the weight of the stone himself, the train coming especially on the right pectoral muscles. He felt something give way, and suffered some pain in the right side following the injury, but not enough to cause him to consult a physician. He continued to work, and during the succeeding days the pain became less severe, but the patient had lost the power to lift heavy loads with the right arm. On the morning of his visit to me he expectorated a few drops of red blood, which alarmed him. He had no cough and no history of previous expectoration of blood or other pulmonary symptoms. There was no history of tuberculosis; no history of any trauma other than that described.

Examination showed a well-developed and nourished man of 49 years, with the heavy musculature of a laboring man. With the exception of the chest findings, the examination is of no interest.

Examination of the lungs was negative on auscultation and percussion. On palpation there was tenderness over the chest in the right infraclavicular region over the third rib, but no crepitus or other signs of fracture could be found. (Subsequent examination failed to show evidence of diabetes, lues or other organic disease.)

An x-ray examination showed a fracture of the third rib in the mid-clavicular line on the right side. There was no evidence of pulmonary disease by x-ray.

The chest was strapped. There was no further hemoptysis and the patient made an uneventful recovery. He was discharged Nov. 28, 1921, at which time he had also fully recovered from the muscular weakness of the right pectoral muscles of which he had complained when he first consulted me.

Of the fifty-six cases previously reported, only thirteen, or 22%, were caused by violent or sudden muscular action other than coughing or sneezing. The case of Dr. Edward Martin, reported by Tunis (8. Tunis, J. P., Rib Fracture from Muscular Action, with forty collected cases, Univ. Med. Mag., iii, p. 57, 1890-91), resembles the one reported above so closely that it seems worthy of consideration. The patient was a laborer, 28, muscular, and in good health. "While lifting a beam with several workmen, the weight was suddenly thrown entirely upon himself. He was stooping forward at the time, and was subjected to a sudden, violent strain." A diagnosis of fracture of the sixth rib at the sternal angle was made.

In reviewing the cases reported, it might be advisable to correct an erroneous impression

regarding the occurrence of fracture of ribs by muscle pull in childbirth. Cheyne-Burghard (9. Cheyne, W. W., and Burghard, F. F., Surgical Treatment, Lea and Febiger, Phila., 1913, vol. v, p. 195) state that "Fractures of ribs may also occur from muscular action alone—for example, during parturition." I can find in the literature only four cases (7%) in which the patient is described as "pregnant"—and, in all instances, the fractures occurred during a coughing spell. Of these four cases, only one occurred at the time of labor, (10. Ahern, M. J., Fractured rib and dislocated clavicle as a result of fits of violent coughing, N. Y. Med. J., lix, p. 503, Apr. 21, 1894) and that during "a violent coughing spell."

Tunis (8.) gives a tabulated report of the forty cases described to that date. Taking his statistics, and bringing them up to date, we may tabulate the fifty-seven cases as follows:—

Rib affected	Number of cases*
First	2
Third	1
Fourth	2
Fifth	3
Sixth	8
Seventh	3
Eighth	9
Ninth	11
Tenth	8
Eleventh	8
"Floating"	1
Unrecorded	11

Side affected	Number of cases
Right	17
Left	28
Unrecorded	12

Comment. In addition to the unusual etiology of the case described in this report, the fracture described is particularly exceptional because of the third rib being fractured. In the cases previously reported the majority (72.7% of the cases in which the site of the fracture was specified) are in the lower six ribs, with the exception of the twelfth. This is the first case reported of fracture of the third rib due to muscular action. Moreover, these fractures are more common on the left side, if we may judge from the small series of cases collected, while this fracture was on the right side. Approximately a fourth of Tunis' series occurred in sound individuals (8.), as in this instance.

From the anatomy of the thoracic musculature, it would seem as though this fracture would occur more frequently than is commonly believed. The strong pectoral muscles, the muscles of the diaphragm, the abdominal muscles, and the serratus magnus all indicate a possibility of strain exerted by sudden stresses which would be sufficient to cause frail and delicate bones such as the ribs to break. No doubt it is only the elasticity of the ribs which prevents this, and it seems peculiar that individuals with a diminished elasticity of the bone, either from senility or disease, should not experience fracture from muscular action more frequently.

It is probable that in most individuals a sudden strain on the muscle such as that to which this patient was subjected would cause a tearing of the muscle fibers or attachments rather than fracture. Because, however, of the excellent development of the muscles of this individual, the pectoral muscles did not give way when subjected to the severe trauma and consequently the rib was fractured.

In conclusion, it seems advisable to emphasize the fact that this type of fracture is much more common than we are led to believe. It is probable that many surgeons have no doubt observed cases of this type and have regarded them as commonplace, disregarding the unusual etiology entirely. It is hoped that more of these cases will be reported so that more complete statistics upon the subject will be available.

*The apparent discrepancy is due to the fact that in some of the cases reported more than one rib was broken.

BOOK REVIEW

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1923. Cloth. Price, postpaid, $1.00. Pp. 72. Chicago: American Medical Association, 1923.

This volume contains the unabridged Council reports that have been adopted and authorized for publication during 1923. Some of the reports, due to their technicality, have only been abstracted in THE JOURNAL; others have been published in entirety, and still others have never been published elsewhere.

In this volume the Council sets forth the reasons that certain proprietary remedies were found unacceptable for New and Nonofficial Remedies, the reason why it has been deemed wise to omit certain hitherto accepted articles from the present, 1924, edition, of New and Nonofficial Remedies, and the volume also contains certain preliminary reports on products that have therapeutic promise, but are as yet in the experimental stage. There is a long report on the widely advertised Fleischmann's Yeast, which was not found acceptable. Benetol, another article that has had much mention in the daily press, receives attention. There are reports on apiol and mercurial oil, which have been omitted from New and Nonofficial Remedies. In addition to these types, there are preliminary reports on bismuth in the treatment of syphilis, ethylene as an anesthetic, peptone in the treatment of migraine, and tryparsamid; and there are reports of such general interest as that on intravenous therapy and that on progress and conservatism in therapeutics.

For one who wishes to be cognizant not only of what the Council has done, but why it has done

it, the book will be very valuable, for it supplements New and Nonofficial Remedies with a more detailed account of the activities of the Council during 1923. New and Nonofficial Remedies records those proprietary remedies which have been accepted; Council Reports treats those which have been found unacceptable, and those which give promise of becoming valuable.

New and Nonofficial Remedies, 1924, containing descriptions of articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1923. Cloth. Price, postpaid, $1.50. Pp. 422+XXXIX. Chicago: American Medical Association, 1924.

Every physician is continually bombarded with literature, scientific and otherwise, concerning the newer remedies. He has neither the time nor the opportunity to investigate all, even of the more promising preparations, and obviously he cannot try them upon his patients without investigation. He must know the composition of the article, must know that the claims under which it is marketed are true; in other words, he must have some critical statement of the actions, uses and dosage as well as of the chemical and physical nature of the product.

This need of the physician is met in New and Nonofficial Remedies, which is the official publication through which the Council on Pharmacy and Chemistry annually presents to the American medical profession disinterested, critical information about the proprietary preparations which the Council deems worthy of recognition. In addition to the description of these proprietary preparations, the book treats those nonofficial remedies which, in the opinion of the Council, are worthy of consideration.

As the book is designed for ready reference, each preparation is classified, and each classification is preceded by a general and critical discussion of that group. These articles are written by those who may speak with authority on the separate subjects, and are a compilation of the best accepted opinions of today. Thus there is a general article on lactic acid-producing organisms in which the newly accepted Bacillus acidophilus preparations are discussed in connection with other accepted sour or fermented milk preparations. The animal organ preparations, the biologic preparations, the arsenic preparations, and so on, are discussed in such a manner as to make the accepted facts concerning each group readily available.

A glance at the preface of the new volume will show that the book has been extensively revised. In fact, each new edition of New and Nonofficial Remedies is essentially a newly written book, fully indexed.

Physicians who wish to know why a given proprietary is not described in New and Nonofficial Remedies will find the References to Proprietary and Unofficial Articles not found in N. N. R. of much value. In this chapter (in the back of the book), there are references to published articles dealing with preparations which have not been accepted.

The book will be sent postpaid by the American Medical Association, 535 North Dearborn Street, Chicago, on receipt of one dollar and fifty cents.

Local Anaesthesia: Lea and Febiger (Philadelphia and New York) present the second American and the sixth revised German edition of the work by PROFESSOR DOCTOR BRAUN, translated and edited by MALCOLM L. HARRIS, M. D., Supervisor of Surgery, Chicago Polyclinic, etc.

This work is entitled "Local Anaesthesia, Its Scientific Basis and Practical Use," and contains 231 illustrations in black and color. The great popularity of this work is shown by the fact that it has passed through six editions. This last edition contains much new matter, and much of the old has been re-written in the light of more extended experience. The author states that he has thoroughly renewed Chapter Six, on "Lumbar and Sacral Anaesthesia," besides adding more recent experiences throughout the text. Novocaine poisoning is treated more extensively, and an attempt has been made to outline more clearly the indications, contra-indications, and limitations of local anaesthesia. The bibliography has been abridged in order to eliminate much which did not have a distinct historical interest.

Our only criticism of this edition is that the illustrations are by no means as clearly printed as in the former edition, and there are very few new illustrations.

What Every Mother Should Know About Her Infants and Young Children: By CHARLES GILMORE KERLEY, M. D. Consulting Pediatrist, Fifth Avenue Hospital and The Babies' Hospital, New York City. Second Edition. Revised. Paul B. Hoeber, Inc. New York, 1924.

This pamphlet of fifty odd pages contains most of the practical information that mothers need to know about the care of their babies, omitting many of the unnecessary refinements that so often fill larger books of this type. The methods applied to infant feeding are undoubtedly those that succeeded best in Dr. Kerley's hands, and to succeed with other methods, as many have, would not be to disagree with him. Most pediatrists, however, would now prefer the simpler boiled whole milk methods of feeding. The diets for older infants and children are admirably simple and yet ample.

The great value of this publication is its very brevity—no important factor is overlooked, and yet it is free from unnecessary verbiage.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, ASSISTANT EDITOR

CASE 10241

First entry. A Nova Scotian of forty-eight, formerly a switchman and motorman, entered March 19.

F. H. Unimportant.

Habits. Good.

P. H. For twenty years he had had "bronchitis," with frequent winter colds. He was fairly healthy and able to work until June, two years ago, then he entered a hospital, and since that time had been unable to work because of faintness and weakness. He had been treated several times at the Out-Patient Department without benefit.

P. I. The duration of the symptoms is not recorded. When the patient lay flat he was perfectly comfortable, ate, slept and felt well. When he tried to sit up he became dizzy and "his heart beat was slow and weak." His physician said that for the past week the patient had had 1/60 of a grain of strychnia t.i.d.

P. E. A large well nourished man lying comfortably and apparently over-acting sickness. *Heart.* No impulse felt. Left border of dullness one inch outside the nipple line. No enlargement to the right. Action irregular in force and rhythm. Sounds valvular. First sound short and weak. A_2 greater than P_2. No murmurs. Pulses irregular. Artery walls palpable and tortuous. Systolic B.P. 185. *Lungs, abdomen, genitals, extremities, pupils* and *reflexes* normal.

T. 97.4°-99.8°. *P.* 61-92. *R.* normal. *Urine.* ℥ 8-75, sp. gr. 1.020-1.025, the slightest possible trace of albumin at both of two examinations, rare leucocytes at one. *Blood.* Hgb. 75%, leucocytes 10,000.

March 21 the patient was made to get up and walk a few steps, and beginning March 23 he was up in a chair daily. After exercise the quality and strength of the heart sounds improved. He did not wish to stay and be forced to get out of bed and walk. March 26 he was discharged, with a diagnosis which included obsession.

History of an interval of two years. He did no work except odd jobs about the house. Three days before readmission, while he was chopping wood, his left arm and leg began to feel weak and numb. He got up stairs with difficulty and after a few moments was unable to move the left arm and leg. At the same time his speech became thick and difficult, although he seemed to understand questions perfectly. He was at no time unconscious.

Second entry. July 12. His age is now given as fifty-two.

P. E. (As before except as noted.) Plethoric looking. Stertorous breathing. Face asymmetrical. No naso-labial fold on the left. He responded promptly to questions and was able to wrinkle his brow and purse his lips. Tongue usually protruded straight, sometimes to right or left. Breath foul. Glands the size of peas and beans in neck and groins. *Heart* apparently normal to percussion. Impulse not found. Action rapid, irregular in force and rhythm. Sounds of poor quality and obscured by loud noisy breathing. A_2 not abnormally increased. A soft systolic murmur accompanied the first sound. Pulses irregular in force and rhythm. Only about half the beats came through to the wrist. Systolic B. P. 200. Artery walls papable, beaded and tortuous. *Lungs.* Expiration somewhat lengthened throughout. Rare musical râles. *Abdomen* prominent, dull tympany throughout. *Genitals* normal. *Extremities.* Left arm flaccid, but with the upper arm supported the patient was able to move the forearm and fingers. Right arm constantly in motion. Left leg rotated outward. *Reflexes.* Left knee-jerk and Achilles increased. Babinski on the left.

T. 101.1°-107.8°. *P.* (radial) 71-49. *R.* 38-61. *Urine.* Amount not recorded, sp. gr. 1.020, a trace of albumin at the single examination. *Blood.* Hgb. 90%, leucocytes 12,000.

The day after admission a different examiner noted thick speech, slow response to questions, and ability to move the left leg somewhat.

The patient slowly and steadily failed. He took no nourishment, had involuntary micturition and defecation, and went into deepening coma which July 14 became complete. The heart action grew steadily weaker. No great increase in the distribution of the paralysis was noted. The lungs filled with râles. July 15 the temperature rose from 104.3° to 107.8° and the patient died.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

On the facts up to the time of his first discharge from the hospital it seems to me that the most definite thing we have is the hypertension, which shows no evidence of being associated

with kidney disease, but—as it has gone on some time—is probably associated with arteriosclerosis, though we do not know enough to say that that arteriosclerosis is its cause. It may perfectly well be its result. Dizziness in a man of his age, suspected of arteriosclerosis, is very apt to be due to his ears, to the same process there that is associated with his hypertension elsewhere.

Probably there is also a mental element in the case, because his heart gets better when he walks though he does not want to walk and thinks he ought to stay in bed.

Probably he was fifty at the time of his first entry.

NOTES ON THE PHYSICAL EXAMINATION

We should like to know what type of irregularity his heart showed. This case was recorded a good while ago when we did not know much about the arrhythmias. Presumably there was no electrocardiographic work done on it.

His heart is enlarged, according to the measurements, and that is enough for us to say that he has a hypertrophied and dilated heart probably without valve lesion. That condition can perfectly well go with what we call a "primary hypertension" or a hypertension of unknown cause. I do not see anything else in the history to make us suppose disease.

DIFFERENTIAL DIAGNOSIS

This is the history of a vascular brain disease which may be hemorrhage and may not, but which in any case means the destruction or the throwing out of function of a certain piece of the brain, by arterial narrowing, thrombosis, embolism or acute softening, or by hemorrhage, all of these different things being clinically indistinguishable from each other and falling under the term "apoplexy." This lesion we have every reason to suppose is on the right side, though it is a little strange that he should have had aphasia, which we should expect if the lesion were on the other side.

The arteriosclerosis, then, which we assumed was present at the first examination, now seems to be giving trouble in the brain, and it was on the basis of that, I have no doubt, that he had this last attack.

The diagnosis seems to be primarily hypertension and arteriosclerosis, with a hypertrophied and dilated heart, the arteriosclerosis presumably involving the vessels of Willis or some of their branches so as to produce a vascular lesion on the right side of the brain.

I do not see any reason to suppose that the kidneys are diseased. He may have a bronchopneumonia, though we do not need to suppose so. We can get all that temperature from brain lesion alone.

In the rest of the body I do not see any signs of disease. So that, as far as I see, it is arteriosclerosis and its results in the heart and brain.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Arteriosclerosis.
Cerebral hemorrhage.
Left hemiplegia.
Myocarditis.
Terminal pneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Arteriosclerosis.
Apoplexy.
Hypertension.
Hypertrophy and dilatation of the heart.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Arteriosclerosis.
Sclerosis of the vessels of Willis.
Cerebral hemorrhage.

2. *Secondary or terminal lesions*

Hypertrophy and dilatation of the heart.
Small dissecting aneurism of the aorta.

3. *Historical landmarks*

Cholelithiasis.
Obsolete tuberculosis of the apical portion of the right lung.
Chronic pleuritis, right.

DR. RICHARDSON: The right pupil was slightly larger than the left. The eyes were otherwise negative. On opening the head we found at the base of the brain much free fluid blood. The vessels of Willis generally showed considerable sclerosis. The brain weighed 1326 grams, including the blood and blood clot in it. The lateral, middle, and fourth ventricles contained a considerable amount of fluid blood. The left cerebral hemisphere presented, deep in the substance of the temporal lobe, a small area of softening showing here and there reddish areas. The area was small, one and a half cm. by one cm. The left side of the brain was otherwise negative. The right side of the brain in the region of the thalamus and extending along as far as the posterior portion of the lenticular nucleus and into the surrounding white matter was a mass of clotted blood and disintegrated brain tissue measuring about six by five by three cm. Extending from the anterior portion of this area of hemorrhage the hemorrhage jutted into the internal capsule and the lenticular nucleus.

At the apex of the right lung there was a patch of fibrous thickening beneath which was a small area of fibrous induration and fibrocalcareous change,—a typical picture of obsolete tuberculosis.

The heart weighed 598 grams—considerably hypertrophied for him. The myocardium was pale and lax. The left ventricular wall measured thirteen mm., the right four—good thicknesses. The myocardium was pale and rather lax. The epicardial fat was quite thick and of course added something to the weight of the heart; it was four mm. in places. There was no definite evidence of fatty infiltration. The valve measurements were: the mitral 10.75 cm., the aortic 7.5 cm., the tricuspid 14 cm., the pulmonary 8.5 cm. The valves were negative. The coronaries showed a little arteriosclerosis but on the whole were very good vessels. The aorta and great branches were capacious and showed scattered along them more or less arteriosclerosis, fibrous in places, and well marked fibrocalcareous changes in other places. At one point in the thoracic aorta there was a very small dissecting aneurism, arteriosclerotic in type.

The gall-bladder contained twelve brownish, rather soft, mulberry-like stones. The bladder was otherwise negative. The bile ducts were free.

CASE 10242

A three-months-old baby of American parentage entered March 11 for relief of cough and loss of weight.

F. H. His paternal grandfather died of tuberculosis, but was not associated with the baby. Five brothers and sisters were living and well.

P. H. He was normally delivered at full term, and at one month weighed six pounds and three ounces. Up to that time he had been breast fed. He was then weaned by advice of a physician, and had been fed ever since by a formula of cow's milk xiv ounces, water xviii ounces, and seven tablespoonfuls of malt sugar, with one nursing by his mother each day. On this feeding he had continued to lose weight.

P. I. Almost from the day of his birth he had had a cough, at times productive. He was irritable and cried constantly. His bowels were constipated, relieved by catharsis. For two weeks he had had a cold with discharge from the nose. March 7 he was seen in the Out-Patient Department, was recommended to come to the wards, and was put upon the following formula for the days of waiting: milk with the top ounce of cream removed xx ounces, barley water xii ounces, malt sugar 5 large tablespoonfuls, 7 feedings of 4½ ounces each. This was not followed except for one or two feedings.

P. E. A poorly developed and nourished infant, coughing considerably. Both fontanels open. Seborrhea. Otherwise head and throat negative. *Lungs.* Good resonance throughout. Many moist musical and crackling râles throughout. Breath sounds harsh. *Heart, abdomen, extremities* and *reflexes* normal.

T. 101.2° at entrance, afterwards 97.2°-100.1°. *P.* 113-160, with one rise to 200 March 14. *R.* 28-52, with one rise to 70 March 23. *Urine.* Amount not recorded, insufficient for sp. gr. test, alkaline at all of five examinations, other findings negative. *Blood.* Hgb. 60%, leucocytes 21,200-11,400, polynuclears 72%, reds 2,384,000, microscopically reds and whites normal. *Wassermann* and *Pirquet* negative. *Stools* negative grossly. Many Gram-positive diplococci, large and small bacilli at two tests. At the first Gram-negative organisms predominated; at the second there were comparatively few.

Orders. March 11. Whole milk, minus the top ounce, xx ounces, barley water xii ounces, malt sugar 5 tablespoonfuls; 7 feedings of 4½ ounces each. Alpine lamp treatment daily. March 12. Whole milk 16 ounces, barley water xvi ounces, malt sugar 4 tablespoonfuls; 7 feedings of 4½ ounces. Albolene drops iii t.i.d. March 28. Whole milk xviii ounces, barley water xiv ounces, malt sugar 5 tablespoonfuls; 7 feedings of 4½ ounces. April 2. Whole milk xx ounces, barley water xii ounces, malt sugar 5 tablespoonfuls; 7 feedings of 4½ ounces.

March 12 squeaky râles were heard over the back and chest, with sounds thought to be transmitted from the nose and throat. March 13 the baby was examined while taking a bottle feeding to prevent his crying. The chest examination showed an area of dullness the size of a half dollar at the angle of the right scapula with nearly bronchial breathing. No râles were heard over this area. Bronchial breathing was heard also at the left base, with squeaky râles which came and went. March 16 with the weakened formula the baby vomited less and the weight had increased two ounces. The diarrhea was less in amount and the general condition better. During the four days ending March 26 he gained four ounces. The stools were normal. The formula was changed to a proprietary milk resembling mother's milk. Before the change to this the intestinal flora were alkaline, with Gram-negative bacteria. After the change to the milk they were acid, with Gram-positive bacteria. The child took his feedings well and responded well to hospital care. It was thought that the home conditions and unintelligent care were the prime factors in his illness. April 5 he was discharged in good general condition.

Discussion

BY DR. FRITZ B. TALBOT

This baby entered the hospital with an acute bronchitis. After the first few days the prob

lem was one of feeding. When he was first seen the history that his grandfather had died of

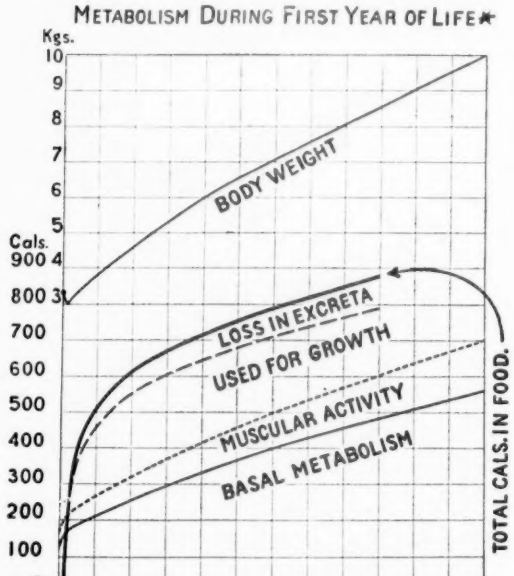

CHART I.

tuberculosis had to be considered, but no great stress was laid upon this because the baby had not been associated with him. The negative Pirquet reaction ruled out tuberculosis.

*Talbot, American Journal Dis. Children, 1919, 18, 229.

He was exposed to the Alpine lamp even though there were no signs of rickets, because March is the sunless time of the year. The lamp was used more as a preventive than a therapeutic measure.

During the first week the bronchitis developed into a bronchopneumonia; before he left the hospital the lungs had completely cleared up.

The interesting feature in this case was the relation between the total caloric intake and the weight curve. The caloric needs were estimated on the basis of Chart I. The total calories for the age or the maximum daily caloric requirements were estimated by finding where the line for his age intercepted the line of total caloric requirements on this chart. The minimum caloric requirements were estimated by determining where the line of his weight, seven pounds six ounces, intercepted the total calories line. These points are indicated on the temperature chart (Chart II). It is to be seen that very quickly after entrance he received approximately the minimum caloric intake, and in the first four days made very little gain in weight. After that with improvement in his general physical condition his appetite improved, and it was possible for him to take on the eighteenth of the month 650 calories in the

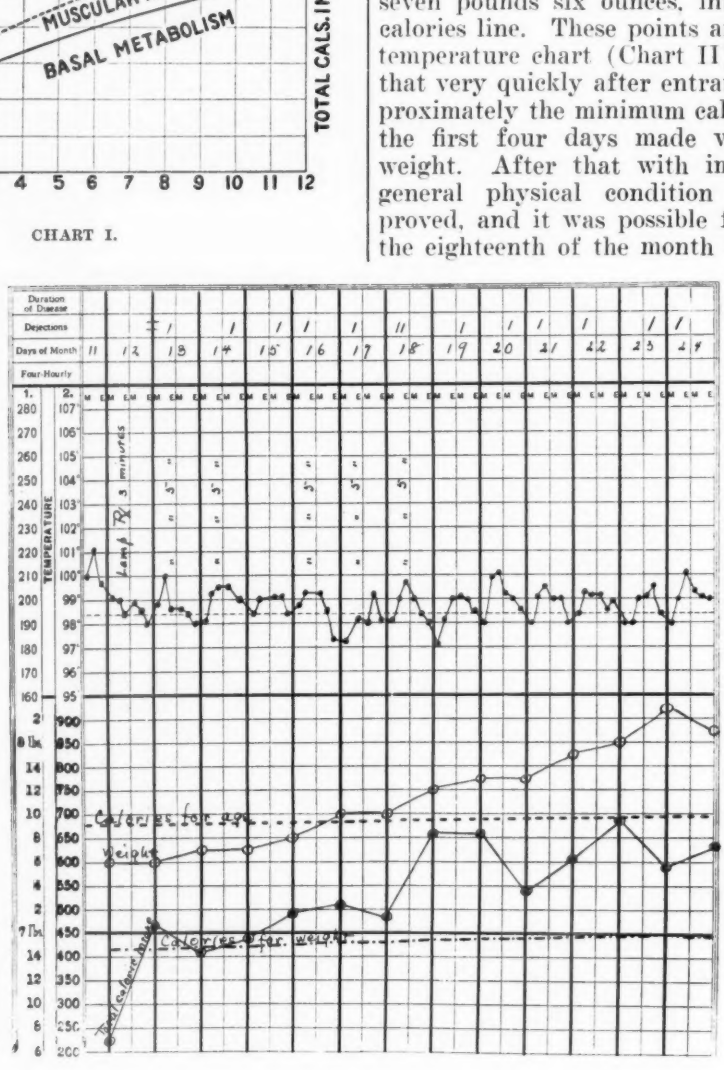

CHART II.

day. This was very close to his maximum caloric intake. Reference to the standard chart shows that when he was able to take and digest that amount of food there was, over and above the number of calories required for his basal

metabolism and activity, an excess which could go into growth. The weight curve shows after the 18th a very rapid gain, approximately two ounces a day.

It is the custom of this clinic to estimate the maximum and minimum caloric intake from Chart I instead of estimating the calories per kilogram of body weight or per pound. It can be seen that on the fourteenth the baby was receiving sixty calories per pound, while on the eighteenth he received seventy-three plus calories per pound. This very high caloric intake from the point of view of body weight would seem to be great overfeeding, but from the point of view of estimating the total calories in the day falls right in with the expected caloric need of this particular baby.

It has been found that when babies are fed per unit of body weight the thin babies require very much more food than the fat babies. If, however, the total calories are estimated the food requirements of babies of about the same age are approximately the same. This however does not apply to marked malnutrition, in which case the digestive functions are weakened and the child is unable to digest and absorb the same total amount of food as the normal child. As a result the total caloric intake of such an infant is much closer to the minimum caloric needs, that is to say the total calories for the weight, than to the maximum caloric needs or the total calories for the age. The optimum caloric intake of course depends upon the digestion of the baby, and as long as the food intake is kept between the minimum and the maximum the food requirements will not as a rule be overstepped. This baby weighed between seven and eight pounds and received a total of between eighteen and twenty ounces of milk while in the ward. This easily covered the protein needs of one gram of protein per pound of body weight. The weight chart and the general appearance of the infant were evidence that the treatment was successful in this case.

CASE 10243

A Scotch carpenter of fifty-nine entered February 13 for relief of pain in the right lower quadrant of three days' duration.

F. H. Not recorded.

P. H. Negative.

P. I. Three days before admission he was awakened by cramp-like pain in the right lower quadrant, severe enough so that he got up and remained awake all night, the pain growing worse. The following day he stayed in bed, vomited twice, not real stomach contents but "phlegm-like" material. That night he was almost prostrated by sudden pain in the right lower quadrant much more severe than before. He had a chill. His bowels moved with an enema. He now complained of general weakness, soreness in the right lower quadrant, and stabbing pain on motion.

P. E. A well nourished man lying with his right leg drawn up. Cheeks flushed. Sclerae showed a very faint yellow tinge. Pyorrhea. Apex impulse of the *heart* in the fifth space, nipple line. No abnormalities recorded (percussion measurements not recorded). *Abdomen* spastic. Spasm and tenderness, greatest in the right lower quadrant, but some spasm in the left lower rectus. *Genitals, extremities,* and *pupils* normal. *Reflexes.* Knee-jerks sluggish.

Before operation *T.* 100.8°, *P.* 100, *R.* 25, *urine* cloudy, a very slight trace of albumin, *blood* not recorded.

Operation was done the afternoon of admission. The patient made a good ether recovery. A moderate amount of foul smelling material drained from the wound. The temperature ranged from 99° to 99.5°, the pulse from 90 to 110. He appeared well and comfortable at the night visit February 14. At half past two the next morning he was found dead.

Discussion

BY DR. LINCOLN DAVIS

The history of this attack, coming on at night suddenly, with the pain localized in the right lower quadrant of the abdomen, with vomiting followed by soreness, suggests of course appendicitis. This is not the typical onset of acute appendicitis. Usually the pain is at first general and not so intensely severe; it increases and then localizes in the right lower quadrant. However, very few cases are typical. The ordinary case that comes into the hospital is almost never typical in every respect.

We often find elderly people with a yellow tinge to the sclerae. I do not think it means anything. But if we find bile in the urine it means a good deal.

I should judge from this account that there was spasm all over the abdomen, but most marked in the right lower quadrant.

There is some fever here.

We have no record of a blood count. That is a thing one would like to have in an acute abdominal case with pain, spasm, rigidity, and we should expect to find leucocytosis in this case.

It seems to me the story of this case is absolutely compatible with a case of acute appendicitis which has gone on to perforation. What else might it be? It might be, possibly, an acute inflammation of the gall-bladder, although we should expect a history of previous attacks and we should expect the pain and tenderness to be higher up. It might be possibly acute perforation of the stomach or duodenum. There again we should expect a history of stomach trouble, and the symptoms more marked in the epigas-

trium. We also get those acute abdominal emergencies such as pancreatitis or thrombosis or embolism of the mesentery. In any of these conditions I should expect at the end of three days the patient to be practically moribund. So that it seems to me the diagnosis I should make in this case on the data is acute appendicitis with perforation.

DR. DAVIS'S PRE-OPERATIVE DIAGNOSIS

Acute appendicitis with perforation.

PRE-OPERATIVE DIAGNOSIS

Acute appendicitis.

OPERATION

Gas and ether. Right lower quadrant muscle splitting incision through which a gangrenous perforated appendix was removed in pieces. The tip was broken off during removal. There was no free pus, but considerable necrotic material surrounding the base and cecum. A cigarette wick was placed to the pelvis and appendix. The operation was easily done. No unusual trauma.

PATHOLOGICAL REPORT

A necrotic appendix with a perforated tip.
Appendicitis.
H. F. HARTWELL.

FURTHER DISCUSSION

There is one point I did not mention. It is recorded that he had a chill. It is always a bad sign when patients have chills in appendicitis. It means that the process is extending. I am always afraid of the possibility of a pyelophlebitis by infection travelling through the mesentery when there have been a number of chills.

We should expect the drainage from the wound. It seems that the operation went smoothly and there was nothing unusual about it.

When a surgical case dies suddenly we always say "pulmonary embolism," but it does not always check up that way when Dr. Richardson examines them. I do not know. We have no data, so it would be a pure guess. I cannot say what he died of. His temperature never got above 99.5° after operation. It is a good looking chart. His pulse was 100 at the time of operation; it got up to 110; that was the highest. It ranged between 90 and 110. That does not look like peritonitis. I think we can rule out death from peritonitis. Did he die of uremia? There is no record of any urine passed after operation. That does not mean he did not pass any. If there was none passed I should feel that uremia would have to be considered. There is certainly no urine recorded.

A SURGEON: In view of the clinical history alone—not of the operation—could a stone in his right ureter give him this picture of vomiting, intense pain, and a rigid belly?

DR. DAVIS: Yes, I think it might give all those symptoms, and the urine here was cloudy. It does not say anything about blood. I think there is often moderate rigidity with stone in the kidney or ureter, but not the rigidity and tenderness that we get with appendicitis. There is something quite characteristic about the feel of the belly in acute appendicitis. There are times when one is sure of it; there are times when one is perhaps doubtful. I think on the data given here that a stone in the ureter should be considered and ruled out. I should have considered it. I don't think we can absolutely rule it out here, but the pain in that kind of case is usually not localized right in the abdomen. It is apt to shoot down into the genitals or into the back, and that is almost unheard of with appendicitis. There is nothing recorded about that.

The cause of death would be a mere guess. I think we have to consider some cardiac lesion, pulmonary embolism, uremia.

A STUDENT: Would massive collapse of the lung cause as sudden a death as that?

DR. DAVIS: If it does cause sudden death we do not discover it. The cases we have had in this hospital have all recovered.

DR. WILLIAM D. SMITH: It is my impression that they almost always get well.

DR. DAVIS: I wonder if Dr. Richardson has found any cases.

DR. RICHARDSON: I have heard of it, but no case with that diagnosis has come down here for examination.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute appendicitis.
Myocardial failure.
Appendectomy.

DR. LINCOLN DAVIS'S DIAGNOSIS

Acute appendicitis with perforation.
Cardiac lesion?
Pulmonary embolism?
Uremia?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Gangrenous appendicitis with perforation.)

2. *Secondary or terminal lesions*

Operation wound, appendectomy.
Pulmonary embolism.
Fibrinopurulent peritonitis.
Edema of the lungs.
Arteriosclerosis.
Arteriosclerotic degeneration of the kidneys.
Hypertrophy and dilatation of the heart.
Soft spleen.
Congestion of liver and kidneys.

3. *Historical landmarks*

Chronic pleuritis.
Obsolete tuberculosis of bronchial glands and apex of left lung.

DR. RICHARDSON: The head was not examined. The heart weighed 500 grams,—rather large, but he was a very big man. There was some arteriosclerosis and a little arteriosclerotic degeneration of the kidneys. This may account for some of the increase in the heart weight. The appendix was wanting, and in that region there was some fibrinopurulent material,—a certain amount of fibrinopurulent peritonitis, not so much but that it seems as though the man might have got the better of it.

The pulmonary artery was occluded by the typical twisting, branching coils of a pulmonary embolus. A case we had here the other day was a typical picture of phlebitis and then a pulmonary embolism,—all that you could ask for. And now in this case in which there is a typical picture of a pulmonary embolus we are unable to find the source at all. This happens as often as the other. There were some varicosities in the legs, but on pressure on them I could not express any plugs from the open ends of the femoral veins. It is well to remember that this is not the only case of pulmonary embolism after appendix operation.

MEDICAL HISTORY

ROLLESTON'S "MEDICAL ASPECTS OF SAMUEL JOHNSON"

IN the *Glasgow Medical Journal* for April 1924, Sir Humphrey Rolleston has a most interesting article with the above title.

Though considerable has been written concerning the Great Lexicographer's diseases, Sir Humphrey points out that the subject has not been worn thread bare. The article is a model for all those who would write of medical incidents concerning the lives of the great. In the early part of the article, of particular interest are the notes of the necropsy, performed by James Wilson, F. R. S. (1725-1821).

The account of the necropsy is headed "Asthma."

"Wednesday, December 15th, 1784, opened the body of Dr. Samuel Johnson for Mr. Cruikshank, in the presence of Drs. Heberden, Brocklesby, Butler, Mr. C., and Mr. White. He died on Monday evening preceding. About a week before his death, Mr. C., by desire of his physicians, scarified his legs and scrotum, to let out the water which collected in the cellular membrane of those parts. Dr. Johnson being very impatient to have the waters gone.

"On the morning of the day on which he died, he repeated the operation himself, and, cutting very deep, lost about ten ounces of blood, he used a lancet for this purpose; he was in too weak a state to survive such an apparently trifling loss.

"For several years past he had been troubled with asthma, for which he commonly used to take opium, and found that nothing else was of service to him; he had discontinued this practice, however, some years before he died."

"On opening into the cavity of the chest, the lungs did not collapse as they usually do when air is admitted, but remained distended, as if they had lost the power of contraction; the air cells on the surface of the lungs were also very much enlarged, the right lobe adhered very strongly to the diaphragm, the internal surface of the trachea was somewhat inflamed; no water was found in the cavity of the thorax. The heart was exceedingly large and strong, the valves of the aorta were beginning to ossify; no more fluid than was common was found in the pericardium."

"In the abdomen seemed to be incipient peritoneal inflammation, and ascites, the liver and spleen were firm and hard, the spleen had almost the fell of cartilage. A gall stone about the size of a pigeon's egg was taken out of the gall bladder, the omentum was exceedingly fat; nothing remarkable was found in the stomach, the folds of the jejunum adhered in several places to one another, there was also a strong adhesion by a long slip between the colon and bladder; the pancreas was remarkably enlarged, the kidney of the left side tolerably good, some hydatids beginning to form on its surface; that of the right side was almost entirely destroyed and two large hydatids formed in its place. Dr. Johnson never complained of any pain in this part; the left testicle was perfectly sound in structure, but had also a number of hydatids on its surface containing a fatty gelatinous fluid, the right testicle had hydatids likewise, but the spermatic vein belonging to it was exceedingly enlarged and varicose. The cranium was not opened."

"N. B.—Mr. White, assisting me to sew up the body, pricked his finger with the needle, the next morning he had red lines running up the arm, and a slight attack of fever."

Sir Humphrey tells us that there are queries about hydatids, appearing to have been added later, as the ink was darker. The common renal cyst, he reminds us, was not recognized as distinct from the rare hydatid cysts until 1793, when Matthew Baillie published his morbid anatomy. The changes enumerated above, Sir Humphrey notes, would today be judged consistant with a high blood pressure, with later renal disease, (chronic intersititial nephritis,) with marked cystic change. The excessively hard feel of the spleen he interprets as being due to chronic capsulitis, and the pancreatic enlargement to engorgement of cardiac origin. The gall stone may have borne some relation to the intense epigastric pain which Johnson suffered

from about 1770. At one time Johnson remarked, "my diseases are an asthma, a dropsy, and what is less curable, seventy-five."

It has been said that much of the most important work of the world is done by neurasthenics and those afflicted with "nerves." Johnson was no exception to this rule, for we are told that he suffered agonies from fits of sudden mental depression, these beginning as early as his twentieth year.

"He fought his cross vigorously by walking, work, and other forms of distraction, especially by conversation, which he characteristically distinguished from mere talk. Thus in 1729 when submerged in morbid melancholy, he often walked the thirty-two miles from Lichfield to Burmingham and back in hope of relief.

"To others his advice was constant occupation of mind, much exercise, moderation in eating and drinking, and especially the avoidance of alcohol at night."

Sir Humphrey tells us that according to Sir Joshua Reynolds, "Solitude (to Johnson) was a horror, nor would he ever trust himself alone but when employed in reading or writing."

George Cheyne's book on "The English Malady," or a Treatise of nervous Diseases, of all kinds, as Spleen, Vapours, Lowness of Spirits, Hypochondriasis, and Hysterical Distempers, (1733,) appealed to him, and he recommended it to Boswell, who was also a victim of attacks of depression.

We are told that Johnson ever insisted that a medical man should always tell his patient the truth, and that it was wrong to lie to a sick man for fear of alarming him. He was a great "dabbler in physic," and was the author of some parts of Robert James Medicinal Dictionary (1743).

In October 1783 the recurrent oedema of the legs spread to the thighs . . . There was a urinary crisis soon after this, Johnson suddenly passing some 20 pints of urine, with temporary relief to the swelling of the legs and thighs. Dieuretics and fasting were probably responsible for this, but not digitalis as we are reminded that Withering's article did not appear until 1785. Johnson improved somewhat, but in the autumn of 1784, all the old symptoms came back, and measures were taken, spoken of in the necropsy report, to try to prolong his life. They were unavailing. On December 13th he asked his servant for a lancet, and cut deep into his legs, with the loss of considerable blood as described in the necropsy notes.

The end came on Dec. 13th, 1784, at 7 P. M.

If that part of Dr. Rolleston's article dealing with the struggles of the great Lexicographer against his phobias, neurasthenic tendencies and melancholy, could be published as a separate paper, and handed by their physician to every patient forced to "Peg Along" with "Those Nerves," it would teach a much needed and salutary lesson to those of the present day similarly afflicted.

CURRENT LITERATURE

ABSTRACTORS

GERARDO M. BALBONI
WILLIAM B. BREED
LAURENCE D. CHAPIN
AUSTIN W. CHEEVER
RANDALL CLIFFORD
ERNEST M. DALAND
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PERNICIOUS ANAEMIA

PINEY, A. (*British Medical Journal*, February 16, 1924), in an article on pernicious anaemia, says that the occurrence of another severe disease during the course of pernicious anaemia partly or completely obliterates the typical blood picture. The secondary anaemias are intensified by the advent of intercurrent disease. [R. C.]

EPITHELIOMA OF THE SKIN AFTER PROLONGED EXPOSURE TO CREOSOTE

COOKSON, H. A. (*British Medical Journal*, March 1, 1924), reports a case of occupational cancer in a worker exposed for many years to creosote. He is of the opinion that the creosote was the cause of the malignant growth and subsequent death of the worker. [R. C.]

THE ABDERHALDEN REACTION—AN ATTEMPT TO BRING IT WITHIN THE REALM OF PRACTICABILITY

SMITH, F. C., AND SHIPLEY, V. T. (From the Pathological Laboratories of the Graduate School of Medicine of the University of Pennsylvania), tested 131 sera: 43 from pregnant women, 15 from non-pregnant women, and 73 from males.

They took great care to minutely follow all details of technique which Abderhalden insists are essential.

They then tested other sera with various modifications of the Abderhalden technique.

Their conclusions are:

1. While the natural ferments present in serum are somewhat increased, there is no evidence that a specific ferment exists in pregnancy.
2. The tests on the sera of pregnant women were uniformly positive, but the large number of positive results on the sera of men and non-pregnant females proves the test of no value for the diagnosis of pregnancy. [W. T. S. T.]

OBSERVATIONS ON THE VIABILITY OF THE MAMMALIAN OVUM

HARTMAN, CARL. (Department of Zoology of the University of Texas) succeeded in recovering a "marked" egg from the uterus of an opossum just after ovulation. He performed a laparotomy on such an animal, and placed a cubic centimeter of a suspension of round-worm ova under the fimbriated end of each oviduct. One uterus was removed twenty-four hours later, and some eggs found in it. Sixteen hours later the other uterus on removal showed

eggs similar to the first batch, and one of the eggs had within the albumen layer an Ascaris egg.

From this experiment as well as others of his own, and those of other investigators, which he cites, the author believes that:

1. It is probable that in all mammals fertilization takes place in the upper third of the fallopian tube, and therefore that

2. The egg cannot wait long for the spermatozoa; that probably hours, not days, measure the delay that results in sterile coitus. [W. T. S. T.]

The Repair of Birth Lacerations of the Cervix Uteri. I. Immediate Trachelorrhaphy

Emge, Ludwig A., reviewed 700 successive cases at the Women's Clinic of the Stanford School of Medicine. About 10% required repair, 7% being primiparae, and 3% multiparae.

His conclusions are:

1. Immediate cervical repair at the end of the third stage of labor is feasible when performed by an experienced obstetrician under ideal conditions.
2. This repair requires special technique.
3. It is not devoid of danger, but when carried out aseptically, will not unduly influence morbidity.
4. May slightly prolong hospital stay.
5. Gives excellent results in primiparae.
6. Unsatisfactory in multiparae.

[W. T. S. T.]

Experiments on Local Specific Therapy in Poliomyelitis

Aycock and Amos (*Johns Hopkins Hospital Bulletin*, Nov., 1923), present the results of their experiments on local specific therapy in poliomyelitis, especially the utilization of hypertonic solutions in the serum treatment of experimental poliomyelitis, with the following conclusions. There is an elaborate list of references.

"This small series of experiments indicate that the use of intravenous hypertonic solutions in conjunction with intraspinous convalescent serum has a favorable influence on the course of experimental poliomyelitis. This effect is augmented by the intravenous injection of convalescent serum at a time corresponding to the compensatory increase in passage of fluid from the circulation to the central nervous system tissue.

"The optimal conditions in respect to the administration of hypertonic solutions remain to be worked out.

"Daily repetition of hypertonic sodium chloride solution is associated with danger of respiratory failure." [J. B. H.]

Recurrent Complete Heart Block with Normal Conduction Between Attacks

Carter and Dieuaide (*Johns Hopkins Hospital Bulletin*, Dec., 1923) report a case of recurrent complete heart block with normal conduction between attacks which they summarize as follows:

1. A case of intermittent complete heart block and syncope with normal auriculo-ventricular conduction intervening is reported.

2. Respiratory and clinical data suggest that the resting ventricular output must have increased in the presence of heart block almost in proportion to the fall in rate.

3. The reported cases of this type indicate that there is usually a progressive anatomical lesion of the auriculo-ventricular bundle and that the prognosis is very unfavorable.

4. The warning is repeated that the atropin test is not necessarily conclusive as to the pathogenesis of heart block. [J. B. H.]

Universal Lymphatic Leukemia of the Skin

Ketron and Gay (*Johns Hopkins Hospital Bulletin*, Dec., 1923) in an article illustrated with remarkably fine photographs and microscopic plates report a case of universal lymphatic leukemia of the skin. The following is a summary of their work.

1. A case of universal lymphatic leukemia of the skin is reported; the blood showed the characteristic findings of chronic lymphatic leukemia.

2. Our case is the 6th one of this unusual skin manifestation of lymphatic leukemia that apparently has been so far reported in the literature. Similar cases, however, have been recorded which are considered examples of aleukemic leukemia or pseudoleukemia in which the blood findings were normal or varied but little from the normal.

3. X-ray treatments to the skin brought about little improvement in our patient.

4. Our histological findings differed, in certain respects, from those which are considered by Arndt as characteristic of the disease. We believe that the cellular infiltration in the cutis is not necessarily limited, in all cases, to one cell type or complex, but may vary depending upon the age of the cells liberated from the blood stream and perhaps upon their further development in the tissues.

[J. B. H.]

The Differential Diagnosis Between Acute Thoracic and Acute Abdominal Lesions

Cope, V. Z. (*British Medical Journal*, April 19, 1924), discussing the differential diagnosis between acute thoracic and acute abdominal lesions, states that there are two muscular tests which, if positive, prove the presence of intra-abdominal disease—the psoas and the obturator tests. They depend upon the fact that when a muscle is moved pain is caused if there be any contiguous inflammatory condition. If pain be felt in the iliac fossa upon flexion or extension of the corresponding thigh, it may be assumed that there is an inflammatory condition adjacent to the psoas muscle. Sometimes hyperextension of the thigh is needed to bring about the pain. The obturator test is performed by rotating the flexed thigh internally; this puts the obturator internus on the stretch, and pain results if there be a contiguous pelvic abscess. Neither of these tests is positive in abdominal pain due to thoracic disease. Another symptom which is never produced by thoracic disease is pain referred to the testicle.

[R. C.]

The Causes of Intestinal Disease

Baldwin, A. (*The Practitioner*, April, 1924), discussing the causes of intestinal disease points out that it has been estimated that 25% of the patients attending hospitals and out-patient departments apply for relief of gastro-intestinal disorders. He states that we have seen a great deterioration in the physique and health of civilized communities. The one outstanding feature which one notices since the degeneration has set in is the use of fine white bread and flour, and this, he thinks, we may justly look upon as one of the chief causes of that degeneration, including constipation, which is so prevalent, and which is the fore-runner of intestinal stasis and all its attendant miseries. Modern constipation is due to the removal of the aperient properties of the grain from the flour: these reside in the germ and in the bran, which should be retained in the flour; but it must be finely ground, to avoid indigestion in those people whose digestive powers have been weakened by the use of white bread and flour. [R. C.]

THE BOSTON

Medical and Surgical Journal

Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

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SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the printer with galley proof of paper.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

The Annual Meeting of the Massachusetts Medical Society

THE recommendations of the Committee of Arrangements to hold the annual meeting at Swampscott were endorsed by a large and enthusiastic number of Fellows.

A very considerable proportion of the Society evidently feels that a convention under one roof is desirable. This plan lends itself to greater sociability and closer contact.

The sections of General Medicine, Obstetrics and Gynecology, Surgery, Pediatrics and Tuberculosis were well attended. One very important section, that on Hospital Administration, was neglected and the very excellent discussions were listened to by a very small audience. The other programs were so full of interesting subjects that practitioners were drawn to them.

It may be that hospital administration has become to a great extent a developed art and science and so distinctly a specialty left to administrators that practitioners feel less responsibility and interest.

The latest addition to the regular section, that of Obstetrics and Gynecology, is evidently to be a permanent addition, for the attendance was as large as the accommodations permitted and the interest was sustained.

The Shattuck Lecture by Dr. C. Macfie Campbell was a masterpiece of logic, apt illustration of the points made by the author, and wit of the highest order. It should be read by every practitioner of medicine.

The annual oration by Dr. James S. Stone was a clear exposition of the duties and responsibilities of the Massachusetts Medical Society to the public. The points made were clear, convincing and well presented.

The address appears in this issue.

The annual dinner was attended by over six hundred Fellows and guests. The speaking was excellent. The serious professional quality of some of the addresses was well supplemented with the witty remarks of others, so that the post-prandial exercises were most enjoyable. A report will appear later.

Taken all in all the Committee in Charge is entitled to commendation for a thoroughly enjoyable meeting. The scientific program was excellent and the social features especially appreciated.

This type of meeting certainly meets the wishes of a large proportion of our Fellows, and raises the question as to how frequently we should omit the long established custom of hospital visits and clinical demonstrations.

It may be that with the larger number of hospitals there is less need of clinics and more opportunity for conferences and social functions is desirable.

The officers elected are:

President—Dr. Enos H. Bigelow, Framingham.

Vice-President—Dr. Ralph W. Jackson, Fall River.

Secretary—Dr. Walter L. Burrage, Brookline.

Treasurer—Dr. Arthur K. Stone, Framingham.

Librarian Emeritus—Dr. Edwin H. Brigham, Brookline.

Orator—Dr. David Cheever, Boston.

Although it is clearly the wish of the Society that Dr. Ralph W. Jackson shall be honored by the election to the Vice-Presidency it has been discovered that only members of the Council are eligible to this office. If this interpretation is correct, Dr. Merrill will probably serve until this wish of the Society can be carried into effect. The method to be adopted will be formulated in due time.

The other business of the Council was conducted with dispatch and the details will appear in the Secretary's official report of the proceedings.

The business meeting of the Society was attended by a bare majority for it was found that the room assigned was still occupied by the Surgical Section making adjournment to another room necessary.

The details will also be published in an early issue of the JOURNAL.

MARBLE, BRICK AND EDUCATION

THE merchant princes of America have done well by Harvard and she is being lodged in palaces. The University is passing through a stage of great material expansion. The law school is a monument to the case system of teaching; Widener, the *mastodon giganteus* of the Yard, shelters one of the greatest libraries of the hemisphere; the Freshman Dormitories are a defiance to the housing problem; the Baker Foundation will build a new college across the Charles, and medical science is entombed in marble walls, although she has no servants' quarters.

The University has but recently fostered a scheme for further expansion, and has launched an appeal for a huge sum to be devoted to the Business School and the Departments of Chemistry and the Fine Arts. The objects are worthy. Boylston Hall, the catacomb of foul odors, where "open sesame" is hydrogen sulphide, is a relic of frontier days in chemistry. The rotund Fogg Museum is no longer worthy of its future. Business, the god of commerce, exacts strict worship and demands a temple.

Through the munificence of a single citizen who wishes well to Harvard and the world, half of this fund is already available, and the Business School will see its needs supplied in toto, including even the desired dormitory. Soon its permanent home will be erected on the banks of the river, where, fittingly enough, it can forever watch the barges pass, even if they are barges of sport and health and youthful vigor, and not of commerce. By this foundation a great drain has been removed from the fountainheads of wealth which the University is wont to tap; fountain heads that flow in varying degree but have never yet dried up.

It is interesting to note that in this call for the sinews of peace no cognizance has been taken of the very real need of the Medical School. In the drive for a dormitory the heads of the University have been willing that the alumni of the School should act, but they have been unwilling to act themselves. Despite the long and honorable career of the School, which we so jealously regard, it has been forced to give precedence to other wants. Repeated experience has taught us to believe that the University has but to make known its needs and sooner or later they are realized. With the successful attainment of the goal of the Business School is it not time for the University to turn its attention to its School of Medicine?

The Dean has made known its need, the alumni have responded to the call, and an enviable start has been made towards the fulfilment of its desires. Should not the University now give its full support?

THE MASSACHUSETTS GENERAL HOSPITAL

THE Massachusetts General Hospital, for the first time, we are told, is making a definite drive for money to carry on its objects. The Bullfinch Building, the original hospital of 1811, is being remodelled with improved ward facilities and a clinical laboratory, at an expense of $300,000. Of this sum a third has already been promised by the General Education Board of the Rockefeller Foundation, on the condition that the Hospital raise the balance. The work is under way and the money is coming in.

No modern teaching hospital, we now realize, is complete without its research laboratory in close conjunction with the wards, where the researcher may have the benefit of clinical material and clinical experience, and where the clinician may avail himself at first hand of the benefits derived from science. It must be admitted that a certain degree of jealousy has long existed between physician and investigator—between sick room and laboratory. Actually the function of neither is complete without that of the other. One is the firing line, the other is the service of supply. Such laboratories as now exist at the Peter Bent Brigham and the Boston City Hospitals, and this, which will replace the makeshift basement laboratories of the Bullfinch Building, will promote this kindly coöperation and mutual appreciation as nothing else can.

The Massachusetts General Hospital has had a long record of unselfish service to the community, the state, the country, and the world. Her graduates have carried her ideals to all parts of the earth. It was here that ether was first publicly demonstrated. It was here that the disease appendicitis was first recognized. It was here that social service had its beginnings. Her service has always been hampered by lack of funds; her struggle has always been against poverty, for, without aid from city or state and with insufficient endowment to meet her growth and growing needs, she has always had to rely on the generosity of public-spirited citizens for the continuance of her work.

In these days of tremendous endowments, of gifts to education reaching into the millions, this request is modest enough. May the hospital not only easily attain this present object, but in the near future acquire sufficient funds to build her needed children's ward and attain the other objects that she is striving for.

MISCELLANY

ESSEX NORTH DISTRICT MEDICAL SOCIETY

EIGHTY-THIRD ANNUAL MEETING was held on invitation of Management and Medical Staff at Lawrence General Hospital, Garden St. corner

Prospect St., Lawrence, Wednesday, May 14, 1924.

The Fellows were offered an opportunity to inspect the entire plant and such clinical material as could be provided.

1. Dinner was served at 12 in nurses' dining room.

2. Business meeting was held in same room, and remarks were made by Enos H. Bigelow, M. D., of Framingham Centre, President of the parent society, upon the Massachusetts Medical Society (10 minutes).

3. From 2 to 4.30, clinics, exhibits and operations occurred in the following departments: Medical, Surgical, Obstetrical, Opthalmological, Aural, Laryngological, Pediatric, Roentgen-Ray; Orthopedic, Contagious, Out-Patient, Laboratory and Nursing.

J. Forrest Burnham, M. D., *Secretary*
567 Haverhill St., Lawrence, Mass.

NEWLY ELECTED OFFICERS

President: Charles S. Benson, Haverhill.

Vice-President: Randolph C. Hurd, Newburyport.

Secretary: J. Forrest Burnham, Lawrence.

Treasurer: Edw. H. Ganley, Methuen.

Auditor: Chas. J. Burgess, Lawrence.

Censors: Roy V. Baketel, Methuen (Supervisor); John E. Bryant, Haverhill; Fred S. Smith, No Andover; Edw. P. Laskey, Haverhill; Roland L. Toppan, Newburyport.

Councilors: Roy V. Baketel, Methuen; Gustave E. Kurth, Lawrence; J. Forrest Burnham, Lawrence; Thos. R. Healy, Newburyport; Wm. W. Ferrin, Haverhill; Adelbert M. Hubbell, Haverhill; F. W. Snow, Newburyport; W. Dacoe Walker Andrews, Elmer S. Bagnall, Groveland.

Nominating Councilor: T. R. Healy, Newburyport.

Alternate Nominating Councilor: A. M. Hubbell, Haverhill.

Commissioner on Trials: I. J. Clark.

Committee on Funds: G. S. Allen, Lawrence, Chairman; G. B. Sargent, Lawrence; F. B. Drever, Haverhill.

The program of the clinical exercises was as follows:

MEDICAL

2-4:30. Dr. Baketel Ward visit. 3 Cardiac cases; 1 Typhoid; 1 Lobar pneumonia; 1 Gastric; 6 Miscellaneous Cases—P & E Wards.

2-3. Dr. Manahan: Uterine operation—small operating room.

2-4:30. Dr. Kurth: Ward visits. Wards A & B.

3-4:30. Dr. Manahan: Ward visits—Wards A & B.

OBSTETRICAL

2-4:30. Dr. Murphy: Ward visits—Ward F.

OPHTHALMOLOGICAL, AURAL AND LARYNGOLOGICAL

2-4:30. Drs. Merrill & Chesley: Cases in O. P. D.

1. Syphilitic, osteitis of head bones with choked disc.
2. End results of lateral sinus operation.
3. Child, following mastoid operation with specific history.

PEDIATRIC

2-4:30. Dr. Sargent. Ward visits—Shattuck Ward.
Cleft palate & hare-lip.
Chorea with peculiar features.
Miscellaneous Cases.

ROENTGEN RAY

2-4:30. Dr. Burgess in X-Ray department.
Plates and histories of fifteen cases.

ORTHOPEDIC

2-3. Operation—Dr. Wood. Soutter Fasciotomy, for infantile paralysis. Operating theatre.

3-4:30. Dr. Wood—Demonstration of five selected cases in O. P. D.

SURGICAL O. P. D.

2-4:30. Dr. Bartley in O. P. D.
Cases with history and X-Ray plates.

CONTAGIOUS

2-4:30. Diphtheria—Dr. Walch. Laryngeal diphtheria with intubation.
Cases of laryngeal diphtheria in Wards.
Scarlet fever—Dr. Walker. Inspection of Wards.

LABORATORY

2-4:30. Dr. Reed and Technician in laboratory.

1. Basal metabolism apparatus.
2. Determination of sugar in blood by colorimeter.
3. Determination of nitrogen in blood urea.
4. Widal reaction.
5. Lymphatic leukemia slides.
6. Carcinoma Slides.

NURSING

2-4:30. Superintendent and Assistants in Stearns Home.

1. Chase Doll.
2. Specimen diabetic diets for twenty-four hours.
3. Tray outfits for various occasions.
4. Nursing procedure of interest.

RECORD DAPARTMENT

2-4:30. Exhibition of the Case and History Records of the Hospital.

THE KATA THERMOMETER

THE results of a study of the value and defects of the kata thermometer are given in Serial 2565, by W. J. McConnell and C. P. Yaglaglou, which has recently been issued by the Department of the Interior through the Bureau of Mines.

The ordinary mercury thermometer is a very inadequate instrument for measuring the physiological effects of atmospheric conditions, the authors point out. It merely accounts for that part of the body heat lost by radiation and convection, while, as a matter of fact, the greater part of the body heat resulting from the metabolic processes within the body is eliminated by means of evaporation from the surface of the body.

It was not until the year 1916 that the kata thermometer was introduced as a physical instrument with possibilities of approaching the dynamical functions of the body in losing heat by radiation, convection, and evaporation. The later pattern is a distinct improvement over the earlier model in so far as results can be duplicated with different instruments.

The instrument is designed to measure the rate of heat loss from its surface at approximately body temperature. Fundamentally, it is a specially constructed alcohol thermometer with a cylindrical bulb 1.8 cm. in diameter and 2.2 cm. in length. The top and bottom of the bulb are hemispherical, and its total length is 4 cm. The stem, 20 cm. in length, is graduated in tenths of a degree Fahrenheit from 95 to 100°. An enlargement of the bore at the top of the stem serves as a safety reservoir in case of accidental overheating, and it also permits the instrument to be heated considerably above 100 degrees, so that by the time it is suspended to the desired position it has acquired a uniform rate of cooling.

The kata thermometer has been used in the studies being conducted by the Bureau of Mines on the effects of high temperatures and humidities of air in mine workings on the comfort conditions, as well as in studies of atmospheric conditions in mine, railway and vehicular tunnels.

TRAINING FOR PRACTICING PHYSICIANS IN PREVENTIVE MEDICINE AND PUBLIC HEALTH

AN increasing proportion of the 145,000 physicians and surgeons of the United States are engaging in various forms of preventive medicine and public health work. Pediatricians are beginning systematically to provide for the health of babies for a specified period of time after birth. An increasing number of private practitioners are giving periodic health examinations. Approximately 12,000 to 20,000 physicians are engaged on a part time or full time basis in special clinics and general dispensaries. Others are becoming employed by tuberculosis associations and various private health agencies. Still others are joining the staffs of county, municipal, state and federal health organizations.

For most of these various types of work, the practicing physician finds himself in need of additional training. Some have sufficient initiative and resourcefulness to obtain this training in the course of their new work. A considerable majority, however, may welcome a chance to obtain up-to-date instruction in a more systematic way. They will find in the public health summer schools of 1924 a unique opportunity for such training. Innumerable combinations of course are possible. Every physician who has already entered or is planning to enter some phase of preventive medicine or of public health work in connection with his private practice or who intends to become associated with some health agency will be able, at any one of the public health summer schools, to find the type of training he needs to enable him to develop greater efficiency in his new work.

PUBLIC HEALTH SUMMER SCHOOLS 1924

CONDUCTED WITH THE CO-OPERATION OF THE UNITED STATES PUBLIC HEALTH SERVICE

Columbia University ..... New York City
July 7 to August 15
John J. Coss, A. M., Director of the Summer Session.
Haven Emerson, M. D., In charge of Public Health Courses.

University of California ..... Berkeley
June 23 to August 2
John P. Buwalda, Ph.D., Dean of the Summer Sessions.
John N. Force, M. D., In charge of Public Health Courses.

University of Iowa ..... Iowa City
June 9 to July 18
C. H. Weller, Ph.D., Director of the Summer Session.
Don M. Griswold, M. D., Director of the Public Health Summer School.

University of Michigan ..... Ann Arbor
*June 23 to August 2**
E. H. Kraus, Ph.D., Dean of the Summer Session.
John Sundwall, M. D., Ph.D., In charge of Public Health Courses.

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*Certain courses at the University of Michigan will continue two additional weeks.
Requests for announcements should be addressed to the Deans of the Summer Sessions.

CORRESPONDENCE

LONDON LETTER

(From Our Own Correspondent)

May 23, 1924.

THE HARNETT LUNACY CASE

As the *London Times*, May 19 last, states in a leading article on the subject of doctors and lunatics, with special reference to the Harnett case: "The more material facts in the case are that Mr. Harnett was certified to be insane in November, 1912; that he was received in a licensed house by the defendant Dr. Adam; that he was released upon probation on December 12; that two days later he went to the office of the Commissioners in Lunacy; that the defendant Dr. Bond came to the conclusion that he was insane and detained him until Dr. Adam, to whom Dr. Bond had telephoned, sent keepers to take him back; and that the plaintiff was kept in various asylums until he ran away in 1921. Mr. Harnett's action against the defendants was for false imprisonment, and on the verdict, in the form of replies to a great many questions, Mr. Justice Lush gave judgment for £20,000 against the defendants jointly and also for £5000 against Dr. Bond. The Court of Appeal, consisting of Lords Justices Bankes, Warrington and Scrutton, have allowed Dr. Adam's appeal, have set aside the verdict and judgment against Dr. Bond, have ordered a new trial in his case conditionally upon repayment by the plaintiff of the money paid him under the order of the court below, and have made a special order greatly restricting the costs payable to the plaintiff, should he succeed in such new trial. As the matter is still more or less *sub judice*, comments upon it are for the great part inadmissible. However, the comments made in the *Times* article are so greatly to the point that they deserve to be recorded, especially as they will give American medical readers a good idea of the existing situation as regards the lunacy laws of England. These comments are as follows:

The judgment of the Court of Appeal stands at present as an authoritative exposition of the law. But the all-important question is whether that law does not urgently need reform. Lord Justice Bankes, quoting that wise and learned judge, the late Lord Lindley, said that the whole scheme of the lunacy laws is based upon the trust reposed in justices of the peace, doctors and specially appointed officials. There is not the least reason to suppose that this trust is abused by negligence, and still less that it is abused maliciously, except in the rarest possible cases. But the powers which it confers are terrible, and they can be exercised in the first instance by any two registered medical practitioners. The personal liberty of every citizen is practically at their discretion, for the justice will usually and rightly be guided in a great degree by their professional opinion. Mistakes are undoubtedly made; even the most highly skilled experts in mental diseases acknowledge the extreme difficulty of decision in cases on the border line between eccentricity and insanity. The alleged lunatic is not told why he has been locked up by anybody except by the doctors in charge of him; he has no legal right even to see the certificates; he is in a worse case, if he is sane, than an alleged criminal, who has a right to a copy of the warrant, to hear the witnesses against him, and to other protection. Once committed and received, the patient in an asylum is practically helpless. He can do little but write to the Lord Chancellor or run away. As numbers of undeniable lunatics favor the Lord Chancellor with their correspondence, it may be supposed that communications from asylums are not always accepted by him at their face value.

The relatives of an alleged lunatic who is in fact sane, and who has become sane, can procure his release without much difficulty, but obviously there may be cases where it is against their interests so to do. On the other hand, the safety of lunatics, of their families, and of the public, demands the existence of means to effect their prompt seclusion. To secure this necessary object without occasional mistakes is, perhaps, impossible. But no effort should be spared to prevent mistakes so frightful, and to provide remedies for them at the earliest possible moment.

If the Harnett case stimulates the public to insist upon a full investigation into the lunacy system and upon a thorough reform, it will have delivered them from a just cause of uneasiness for themselves and of reproach for the possible infliction of dreadful wrong upon helpless sufferers who may have been mistakenly condemned as insane to hourly asso tion with undoubted lunatics.

It may be added that medical men and lawyers are not agreed as to the definition of lunacy, which, of course, is a most difficult question. In some cases the dividing line between sanity and insanity is of the most fragile nature, and it seems that borderland cases of this kind should be placed under expert observation for some time before a final decision is come to. However, there seems little doubt that the lunacy laws of England require revision and reform. Or rather, perhaps, it will be best that a completely new set of laws of a more simple character are made, as the present ones are old laws revised and amended and too confused with legal phraseology.

AMERICAN MEDICAL ASSOCIATION

COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
May 29, 1924.

Editor, Boston Medical and Surgical Journal:

Dear Doctor—In addition to the articles enumerated in our letter of April 26 the following have been accepted:

Abbott Laboratories—Neutral Acriflavine-Abbott for Intravenous Injection, 0.1 gm. ampules.

Hoffmann-La Roche Chemical Works—Digalen-Roche (Cloetta): Ampules Digalen-Roche (Cloetta), 1.1 cc.; Tablets Digalen-Roche (Cloetta); Hypodermic Tablets Digalen-Roche (Cloetta).

Lederle Antitoxin Laboratories—Pollen Antigens-Lederle: Giant Ragweed Pollen Antigen-Lederle; Green Sage Pollen Antigen-Lederle; Lamb's Quarters Pollen Antigen-Lederle; Marsh Elder Pollen Antigen-Lederle; Olive Pollen Antigen-Lederle; Pasture Sage Pollen Antigen-Lederle; Southwestern Ragweed Pollen Antigen-Lederle; Western Water Hemp Pollen Antigen-Lederle; Western Ragweed Pollen Antigen-Lederle.

Mead Johnson & Co.—Mead's Powdered Protein Milk.

Ohio Chemical and Manufacturing Company—Ethylene for Anesthesia.

E. R. Squibb & Sons—Pollen Allergen Solutions-Squibb: Annual Salt Bush Pollen Allergen Solution-Squibb; Arizona Ash Pollen Allergen Solution-Squibb; Arizona Cottonwood Pollen Allergen Solution-Squibb; Arizona Walnut Pollen Allergen Solution-Squibb; Ash Pollen Allergen Solution-Squibb; Black Mulberry Pollen Allergen Solution-Squibb; Bermuda Grass Pollen Allergen Solution-Squibb; Black Walnut Pollen Allergen Solution-Squibb; Brome Grass Pollen Allergen Solution-Squibb; California Black Walnut Pollen Allergen Solution-Squibb; Careless Weed Pollen Allergen Solution-Squibb; Cedar Pollen Allergen Solution-Squibb; Cocklebur Pollen Allergen Solution-Squibb; Corn Pollen Allergen Solution-Squibb; Dark Leaved Mugwort Pollen Allergen Solution-Squibb; False Ragweed Pollen Al-

lergen Solution-Squibb; Hickory Pollen Allergen Solution-Squibb; Johnson Grass Pollen Allergen Solution-Squibb; June Grass Pollen Allergen Solution-Squibb; Lamb's Quarters Pollen Allergen Solution-Squibb; Marsh Elder Pollen Allergen Solution-Squibb; Nettle Pollen Allergen Solution-Squibb; Oak Pollen Allergen Solution-Squibb; Mugwort Pollen Allergen Solution-Squibb; Orchard Grass Pollen Allergen Solution-Squibb; Pigweed Pollen Allergen Solutions-Squibb; Pine Pollen Allergen Solution-Squibb; Poplar Pollen Allergen Solution-Squibb; Ragweed Pollen Allergen Solution-Squibb; Rye Pollen Allergen Solution-Squibb; Sagebrush Pollen Allergen Solution-Squibb; Sandbur Pollen Allergen Solution-Squibb; Shadscale Pollen Allergen Solution-Squibb; Sheep Sorrel Pollen Allergen Solution-Squibb; Slender Ragweed Pollen Allergen Solution-Squibb; Sweet Vernal Grass Pollen Allergen Solution-Squibb; Timothy Pollen Allergen Solution-Squibb; Western Ragweed Pollen Allergen Solution-Squibb.

Wilson Laboratories—Desiccated Parathyroid Substance-Wilson: Tablets Desiccated Parathyroid Substance-Wilson, 1/20 grain; Tablets Desiccated Parathyroid Substance-Wilson, 1/10 grain.

Yours truly,
W. A. PUCKNER, *Secretary*.
Council on Pharmacy and Chemistry.

DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

WEEK ENDED MAY 31, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Actinomycosis	1	Mumps	198
Anterior poliomyelitis	3	Ophthalmia neonatorum	18
Chickenpox	159	Pellagra	1
Diphtheria	124	Pneumonia, lobar	72
Dog-bite requiring anti-rabic treatment	8	Scarlet fever	282
Encephalitis lethargica	1	Smallpox	1
Epidemic cerebrospinal meningitis	1	Syphilis	27
German measles	65	Tetanus	1
Gonorrhea	79	Suppurative conjunctivitis	16
Hookworm	1	Trichinosis	1
Influenza	4	Tuberculosis, pulmonary	113
Malaria	2	Tuberculosis, other forms	28
Measles	650	Typhoid	10
		Whooping cough	86

STATE OF CONNECTICUT, DEPARTMENT OF HEALTH

WEEKLY MORBIDITY REPORT

Week Ending May 24, 1924

(Including all cases reported before 11 a. m., Monday, May 26, 1924)

Diphtheria

Fairfield County	
Bridgeport	4
Stamford (C)	1
Hartford County	
Berlin	1
Farmington	1
Hartford	4
New Britain	3
New Haven County	
Waterbury	3
West Haven	1
State total	18
Last week	25

The following diphtheria bacilli carriers were reported:

Hartford	6
New Britain	2
New Haven	1

Whooping Cough

Fairfield County	
Redding	1
Stamford (C)	2
Hartford County	
Berlin	4
Hartford	1
Southington	1
New Haven County	
New Haven	1
Waterbury	1
West Haven	2
State total	13
Last week	36

Scarlet Fever

Fairfield County	
Bridgeport	10
Danbury (C)	1
Easton	1
Norwalk	2
Stamford (C)	5
Stamford (T)	2
Hartford County	
Bristol	3
East Hartford	2
East Windsor	1
Hartford	6
Manchester	2
New Britain	8
West Hartford	1
Wethersfield	1
Litchfield County	
Plymouth	3
Thomaston	1
Watertown	3
Middlesex County	
Cromwell	2
New Haven County	
Cheshire	2
Hamden	1
New Haven	11
Waterbury	3
West Haven	3
New London County	
Colchester	3
Groton (T)	1
North Stonington	3
Norwich (T)	3
Stonington	3
Windham County	
Killingly	1
Thompson	1
Windham	1
State total	90
Last week	102

Smallpox

Hartford County	
New Britain	2
Plainville	1
Southington	1
State total	4
Last week	8

Measles

Fairfield County	
Bethel	11
Bridgeport	1
Brookfield	17
Greenwich	2
Ridgefield	3
Sherman	2
Stamford (C)	3
Hartford County	
East Hartford	7
East Windsor	8
Hartford	39
Manchester	4
New Britain	3
Suffield	3
West Hartford	2
Wethersfield	1
Litchfield County	
Kent	10
North Canaan	5
Washington	4
Watertown	1
Middlesex County	
East Haddam	1
Haddam	1
New Haven County	
Guilford	12
New Haven	8
Waterbury	2
West Haven	8
New London County	
Groton (B)	9
Tolland County	
Stafford Springs	1
State total	168
Last week	113

Typhoid Fever

Fairfield County	
Norwalk	5
Hartford County	
Hartford	2
New Haven County	
New Haven	2
Waterbury	1
State total	10
Last week	2

Other Communicable Diseases

Cerebrospinal Men.	2
Chickenpox	35
Conjunctivitis Inf.	6
Dysentery (amoebic)	1
Encephalitis Epid.	2
German Measles	8
Mumps	95
Pneumonia (lobar)	27
Septic Sore Throat	1
Tuberculosis (pul.)	28
" (other forms)	3
Gonorrhoea	11
Syphilis	61

NEWS ITEMS

DR. B. THURBER GUILD of Dorchester, office: 491 Commonwealth Ave., Boston, is leaving for a ten weeks' tour of England and France.

DR. JAMES F. LOUGHRAN and DR. WILLIAM F. RYAN now have their offices in the Appleton Bank Building, 174 Central St., Lowell.

THE LAWRENCE MEDICAL CLUB.—The monthly meeting of the club was held Monday even-

ing, May 26, with Harold M. Allen, M. D., at Red Tavern, Methuen. Chairman for the evening, John J. Bartley, M. D. Subject: "Lawrence Water Supply," A. X. Dooley, Esq., of Lawrence.

WACHUSETT MEDICAL IMPROVEMENT SOCIETY.—The Wachusett Medical Improvement Society met Wednesday, June 4, at 7:30 P. M. at the Veterans' Hospital No. 89, Rutland, Mass. Papers: "Pneumothorax," Dr. E. D. Pillsbury; "Tuberculosis In Its Relation to the General Practitioner," Dr. George W. Beach; a paper by Dr. Charles W. Yokley. All the above speakers are on the medical staff of the Veterans' Hospital. A buffet lunch and dancing followed the scientific session.—G. W. LAPHAM, *Sec.*

DR. ARTHUR E. PATTRELL, executive officer Boston Psychopathic Hospital, has accepted the position of Assistant Superintendent of the Sheppard and Enock Pratt Hospital, Towson, Md. He will assume the duties of this position July first.

OBITUARIES

JOHN J. O'SULLIVAN, M. D.

WORDS seem useless to express the esteem, love and cordial good fellowship in which the late Dr. John, as he was so well known, was held by the members of the Lawrence Medical Club. His rare personality, kindly smile and presence made him always a delightful companion. He was of a loveable character, and simple and unassuming in his ways, always had a kindly smile and was a large man, mentally and physically. As one of his confreres so aptly said: "He was a big man, discreet of tongue and mind."

Dr. O'Sullivan was born in Lawrence in 1871. and attended the public schools and was a graduate of the Lawrence High School. Following the receipt of his degree from Harvard Medical School he began the practice of medicine in Lawrence, and continued it for 28 years.

Outside of his medical duties and affiliations he did not care for social life, as defined by sociey, and had few hobbies. He was passionately fond of music and flowers, however.

As a physician he enjoyed a splendid reputation in the community and was a man of fine moral character. He seemed happy unto himself in the radiations of a pure soul and mind and lived apart from the petty things of gossip and the imperfections of his fellow-men. He was content in living a simple straightforward life.

He was a Fellow of the Massachusetts Medical Society, an ex-president of Essex North District Medical Society, a Fellow of the American Medical Association, a member of the Lawrence Medical Club and a member of the Medical Staff of the Lawrence General Hospital.

The profound sorrow shown by the public, and the expressions of sympathy, at his death and funeral was a splendid heritage to the character of the man and physician.

Dr. John was a devoted son and companion to his widowed mother, and a most familiar sight was the riding of the doctor and mother.

The medical profession of greater Lawrence, and particularly the Lawrence Medical Club, has suffered a distinct loss in the death of Dr. O'Sullivan.

F. D. MCALLISTER,
R. V. BAKETEL,
J. J. BARTLEY,
Committee from Lawrence Medical Club.

NOTICES

PROGRAM OF THE AMERICAN PROCTOLOGIC SOCIETY

June 23-25, 1924

Headquarters, New York Academy of Medicine, New York, N. Y.

Presidential Address—"Quo Vadis," Proctologist? R. W. Jackson, Fall River, Mass.

The Evolution of Proctology as a Specialty in the United States. W. M. Beach, Pittsburg, Pa.

Streptococcic Invasion of the Rectum—Case Report. H. B. Adams, Philadelphia, Pa.

Focal Infection. H. Goldman, New York City, N. Y.

A Consideration of Anal Tuberculosis. H. Z. Hibshman, Philadelphia, Pa.

An Operation for Third Degree Rectal Prolapse. L. J. Hirschman, Detroit, Mich.

Diverticula and Diverticulitis. E. I. Huppert, New York City, N. Y.

Intra-rectal Rupture of Suppurating Sinus from Hip Joint Disease. R. W. Jackson, Fall River, Mass.

Problems Relative to the Spastic Colon. E. B. Kaple, Syracuse, N. Y.

Precancerous Conditions about the Rectum. A. A. Landsman, New York City, N. Y.

My Problems in Proctology. D. C. McKenney, Buffalo, N. Y.

Pilo-nidal Sinus. C. F. Martin, Philadelphia, Pa.

Pruritus of the Perineum. J. F. Montague, New York City, N. Y.

Proctology among the Insane. D. Morton, St. Joseph, Mo.

True Dermoid Cyst of the Anterior Wall of the Rectum—Case Report. J. F. Saphir, New York City, N. Y.

Genesis of Certain Recto-colonic Carcinomata. F. C. Yeomans, New York City, N. Y.

Experiences with Sacral Anesthesia in Proctology. L. E. Moon, Omaha, Neb.

The Injection Treatment of Hemorrhoids. A. H. Early, Denver, Colo.

Rectal Adenoma of Unusual Size—Case Report (lantern slides). H. E. Dunne, Washington, D. C.

Photography of Anal Pathology (lantern slides). S. E. Newman, St. Louis, Mo.

A Study of Pruritus Ani as a Phenomenon of Protein Sensitization. E. H. Terrell and A. H. Vaughn, Richmond, Va.

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